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BRITISH MUSEUM
4 MAY 1970
NATURAL HISTORY

A REVISION OF THE N.W. EUROPEAN SPECIES OF *MICROPLITIS* FÖRSTER (HYMENOPTERA: BRACONIDAE)

G. E. J. NIXON

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ENTOMOLOGY Vol. 25 No. 1
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BRITISH MUSEUM
4 MAY 1970
NATURAL HISTORY

BY
GILBERT EDWARD JAMES NIXON
Commonwealth Institute of Entomology

Pp. 1–30; 29 *Text-figures*

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A REVISION OF THE N.W. EUROPEAN SPECIES OF *MICROPLITIS* FÖRSTER (HYMENOPTERA: BRACONIDAE)

By G. E. J. Nixon

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SYNOPSIS

The North West European species of *Microplitis*, in so far as they have been available to me in the British Museum (Natural History), are revised. These number twenty-eight species, of which eight are introduced as new. Two further species are placed in synonymy.

ACKNOWLEDGEMENTS

My thanks are specially due to Mr A. W. Stelfox of Newcastle, Co. Down, N. Ireland for having lent me some years ago his collection of *Microplitis*, now the property of the U. S. National Museum. I wish to thank also the following gentlemen for the loan of material :—Dr Miroslav Capek of the Forest Research Institute, Banska Stiavnica, Czechoslovakia, Dr Max Fischer of the Naturhistorisches Museum, Vienna and Dr Wolter Hellén of the Helsinki Museum, Helsinki.

The genus ***MICROPLITIS*** Förster

In my revision of the Microgasterini I included *Microplitis* in my key to genera (1965 : 15) and made a brief reference to it on page 7. I made no attempt to split the genus into species-groups, though I remarked that this would need to be done eventually. I have not considered it either appropriate or practical to adopt such a course in this paper for the reason that the few species discussed, coming from a relatively small geographical region, do not cover the wide range of structure permitted by the generic definition of *Microplitis*.

Being based solely on material I have had before me, the paper contains no reference to published host-records, since it is rarely possible to be certain, from the literature, what species of *Microplitis* is being referred to.

Nothing, as far as I can discover, seems to be known about the complete annual life-cycle of the species occurring in N. W. Europe. Information is particularly needed not only about the range of hosts that the parasites may use at one time, but also what lepidoptera will be attacked when the next generation of parasites emerges.

Some species emerge when the host in which they have developed is no longer available at a suitable stage for parasitization. For example, *sordipes* leaves its winter cocoon in the spring, its hosts being acronyctid larvae parasitized the previous autumn. The cocoon, described in the text, is very characteristic in appearance. Now specimens of *Microplitis*, bred during the summer months from various hosts but spinning a cocoon quite different from that of *sordipes*, seem to be inseparable from this species. I am therefore suggesting that *sordipes* makes two kinds of cocoon, a tough, cryptic one in which to pass the winter and a simple one, thinner in texture and of generalized form, on emergence from its summer hosts. This view is supported by the available information.

I am not at all satisfied that I have been able to define clearly the limits of some of the species, for example, *viduus* and *ruricola*, *mediator* and *tuberculifera*. These two pairs of species are still in need of study. With few exceptions, among them *sispes*, *spinolae*, *xanthopus* and *ocellatae*, species of *Microplitis*, as far as my own experience allows me to judge, can be determined only by rather subtle combinations of characters.

In my companion paper on *Microgaster* (1968), I was able to announce that I had discovered several useful characters that could be used in the separation of species of that genus. *Microplitis* has proved more resistant and I have been able to find only one new character and this, I think, has no more than species-group value. This structure is referred to as a ' hair-line '; it is composed of a fine, raised line running longitudinally along the inner side of the hind femur, somewhat nearer to its dorsal than its ventral edge. Usually this raised line or ridge is beset along its whole length with a row of minute setae ; adjacent to it and parallel with it along its dorsal side are frequently two or three finer ridges. This structure is by no means always well defined. It seems to occur in the solitary species and is certainly absent in the majority of those species that I definitely know to be gregarious.

KEY TO SPECIES

FEMALES

1 First tergite distinctly, sometimes strongly, widened towards apex . . . 2

– First tergite not widened towards apex, parallel-sided or more often narrowed apically 7

2 Hind tarsus entirely reddish yellow ; hypopygium strongly developed and ovipositor freely projecting (Text-fig. 28).
Stigma bright orange-yellow on about basal third . ***xanthopus*** Ruthe (p. 28)

– Hind tarsus infuscate virtually throughout ; if not much darker than its tibia, then stigma dark throughout ; neither hypopygium strongly developed nor ovipositor freely projecting 3

3 Second tergite with at least some trace of rugosity, more distinct on lateral third . 5

– Second tergite polished and virtually smooth.
Scutellum polished and smooth at least over most of its medial surface . . 4

4 Flagellum slightly longer and thinner, dark throughout ; its preapical segment a little more than twice as long as wide ; lateral lobe of the mesoscutum polished and smooth right up to the anterior brow ; scutellum extensively and highly polished, strongly convex and with very few scattered hairs ; fore wing without a cloud beneath the stigma ; mesoscutum without trace of a medial keel
capeki sp. n. (p. 27)

– Flagellum slightly shorter and thicker, pale beneath ; its preapical segment only about one and one third times longer than wide ; lateral lobe of the mesoscutum dull because of fine surface sculpture ; mesoscutum almost always with a medial keel ; fore wing with a conspicuous cloud beneath the stigma ; scutellum less extensively polished, less convex and much more hairy . . ***sordipes*** Nees (p. 26)

5 Scrobes above becoming smooth, polished, the shining area reaching the level of the anterior ocellus ; 1st tergite about one and a half times longer than wide apically. Stigma bright orange-yellow on about basal third . . ***spinolae*** Nees (p. 27)

– Scrobes above dull, rugose, without this shining, polished space ; 1st tergite shorter, and usually more obviously widened apically 6

6 First tergite shorter, more conspicuously widened behind (Text-fig. 2) ; 2nd tergite much more obviously, sometimes strongly, rugose ; mesoscutum usually with keel ; tegula brown or blackish . . . . ***ratzeburgi*** Ruthe (p. 25)

– First tergite less widened behind (Text-fig. 5) ; 2nd tergite with much weaker rugosity, often hardly indicated ; mesoscutum with at most a faint line of raised rugosity ; tegula bright reddish yellow . . . ***fumipennis*** Ratzeburg (p. 25)

7 Antenna very short ; 1st segment of flagellum very distinctly less than twice as long as wide. Notaulices showing as deeply impressed, rugose furrows ; front femur short, swollen ; 1st tergite distinctly a little widened behind . ***heterocera*** Ruthe (p. 10)

– Antenna rarely as short as this and then the 1st segment of the flagellum is fully twice as long as wide and the notaulices are indicated at most by a band of dull rugosity 8

8 Ovipositor sheath very thin (Text-fig. 29), freely projecting beyond the apex of the gaster by a length equal to that of the 2nd segment of the hind tarsus ***sispes*** sp. n. (p. 15)

– Ovipositor sheath short, thicker, more or less concealed 9

9 First tergite subrectangular; if longer than wide, then not obviously narrowed apically ; if hardly longer than wide and a little constricted apically, then with a rather smooth, flattened appearance (*ocellatae*) ; in any case, never more than one and a half times longer than wide 10

– First tergite usually markedly narrowed apically and terminating in a polished knob ; at least twice as long as its middle width. Notaulices not impressed or conspicuous though frequently indicated by a band of coarse rugosity 22

10 Hind femur entirely or in greater part reddish or reddish yellow 11

– Hind femur varying from blackish to pale brownish yellow flushed with darker colouring along dorsal surface 17

11 Apical ventrite with a deep, apical emargination (Text-fig. 20). Sculpture of mesoscutum much reduced, the lateral lobes strongly shining and smooth-looking ; 1st tergite somewhat flattened and often reddened towards base ; tegula yellow . . . . ***ocellatae*** Bouché (p. 13)

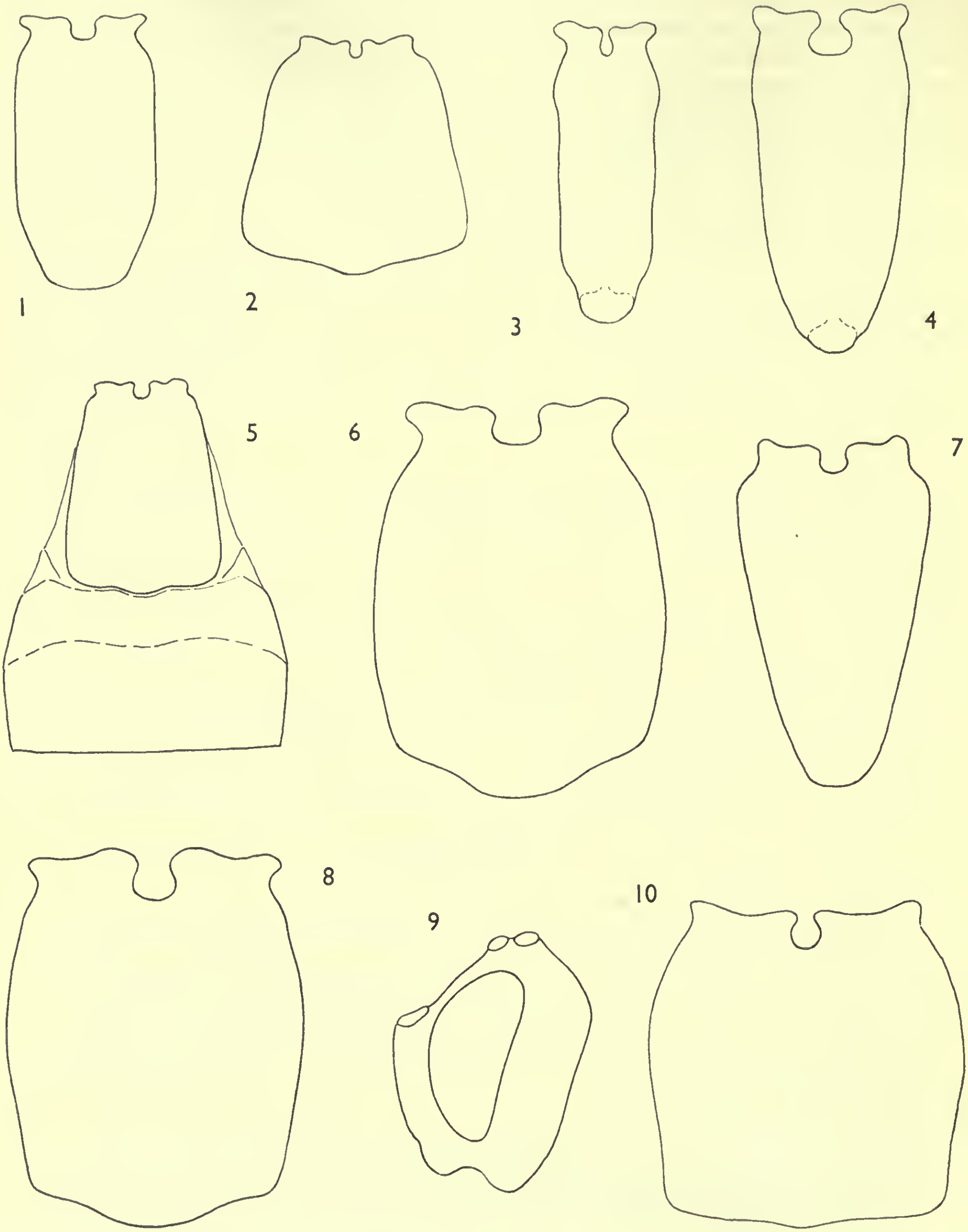
– Apical ventrite not emarginate. 12

12 Tegula reddish or reddish yellow 13

– Tegula blackish 15

13 Scutellum polished and almost unsculptured over its greater, medial part ; stigma somewhat short and wide (Text-fig. 22), its inner, proximal margin somewhat convex ; preapical segment of the flagellum hardly one and two thirds times longer than wide. . . . . ***sordipes*** Nees (p. 26)

– Scutellum dull, rugulose all over, even if weakly at middle ; stigma of usual shape, its inner, proximal margin hardly convex (Text-fig. 23) ; preapical segment of the flagellum fully twice as long as wide. Stigma entirely dark ; flagellum long, thin, tapering to apex. 14



FIGS 1–10. *Microplitis*, ♀ : petiole of 1, *mandibularis* Thomson. 2, *ratzeburgi* Ruthe. 3, 4, *tuberculifera* Wesmael. 5, *fumipennis* Ratzeburg. 6, *idia* sp. n. 7, *sispes* sp. n. 8, *capeki* sp. n. 9, *capeki* sp. n., head (lateral). 10, *ocellatae* Bouché.

14 Fourth segment of the front tarsus hardly one and a half times longer than wide ; stigma less attenuated apically, the metacarp slightly shorter ; vannal lobe relatively smaller . . . . ***strenuus*** Reinhard (p. 22)

– Fourth segment of the front tarsus about twice as long as wide ; stigma more attenuated apically, the metacarp somewhat longer ; vannal lobe relatively longer . . . . ***eremita*** Reinhard (p. 22)

15 Scutellum very coarsely rugose-reticulate, appearing intensely black and glistening. Scape reddish, except at extreme apex ; stigma brown, rather short and wide, its external margin showing 4–6 black bristles ; preapical segment of the flagellum hardly less than twice as long as wide . . . . . . ***docilis*** sp. n. (p. 28)

– Scutellum without such coarse sculpture, though still rugose all over . . . 16

16 Flagellum somewhat short and thick (Text-fig. 19), the preapical segment about one and a half times longer than wide ; hind femur often darkened in places ***viduus*** Ruthe (p. 23)

– Flagellum longer, thinner, not bristly, the preapical segment about twice as long as wide ; hind femur usually entirely red . . . . . . ***ruricola*** Lyle (p. 24)

17 Flagellum long, thin, the preapical segment fully twice as long as wide ; stigma entirely dark 18

– Flagellum shorter, rather thick, the preapical segment not more than one and a half times longer than wide ; stigma usually conspicuously yellow basally . . 19

18 Hind femur without a hair-line ; scutellum shining and almost smooth ***idia*** sp. n. (p. 14)

– Hind femur with a hair-line ; scutellum dull, rugose all over . ***fordi*** sp. n. (p. 20)

19 Flagellum somewhat bristly (Text-fig. 19) ; large species, *c.* 3·5 mm. Hind femur with a more or less distinct hair-line. . ***viduus*** Ruthe (p. 23)

– Flagellum not at all bristly ; smaller species, not exceeding 3 mm . . . 20

20 Stigma conspicuously marked with yellow at base ; hind tibia more or less uniformly dull reddish, without trace of apical infuscation ; hind femur without a hair-line. Setae of the gaster somewhat inconspicuous, often restricted to a single row on the tergites ; gregarious spp. 21

– Stigma with at most the faintest trace of yellow at base ; hind tibia rather pale yellow with faint, apical infuscation ; hind femur with a distinct hair-line. Gaster conspicuously hairy . . . . ***fordi*** sp. n. (p. 20)

21 Hind wing strongly embrowned, its basal vein deeply, almost angularly curved at middle (Text-fig. 12) ; front and middle femur markedly thickened ; inner spur of the hind tibia rather long. Scutellum almost polished. . . . . ***tristis*** Nees (p. 13)

– Hind wing not thus embrowned, its basal vein only weakly curved at middle (Text-fig. 11) ; front and middle femur not markedly thickened ; inner spur of the hind tibia shorter. Flagellum frequently pale at base . . . . . ***spectabilis*** Haliday (p. 12)

22 Hind femur in greater part, or entirely, blackish or dark brown 23

– Hind femur in greater part, or entirely, reddish or yellowish 27

23 Mesoscutum with greatly reduced sculpture, posteriorly without an area of raised rugose-reticulation, the general surface decidedly shiny. Head distinctly widened behind the eyes ; antenna short . . . 24

– Mesoscutum more strongly sculptured, posteriorly with a large area of raised rugose-reticulation that extends forwards along the course of the notaulices. First abscissa of the radius very obliquely placed on the stigma (Text-fig. 24) . 25

24 Flagellum very short, the preapical segment hardly one and one third times longer than wide ; femora short and thick, especially the front pair ; stigma yellowish on about basal third ; 1st abscissa of the radius very obliquely placed on the stigma ; vannal lobe small . . . . ***aduncus*** Ruthe (p. 12)

– Flagellum longer, the preapical segment fully one and a half times longer than wide ; femora not unusually thickened ; stigma brown throughout ; 1st abscissa of the radius placed almost at right angles to the stigma ; vannal lobe considerably longer than in *aduncus* . . . . ***naenia*** sp. n. (p. 14)

25 Basal third to two fifths of stigma bright yellow ; 1st tergite tending to be narrowed only at extreme apex.

Preapical segment of the flagellum nearly twice as long as wide ; inner side of the hind femur on apical half with narrow, longitudinal band of delicate aciculation ; hind tibia straw-yellow, without or with only very faint, apical infuscation ***sofron*** sp. n. (p. 21)

– Stigma dark virtually throughout ; 1st tergite gradually narrowed from base to apex 26

26 Preapical segment of the flagellum hardly longer than wide ; hind femur without band of aciculation in apical half on inner side ; 1st tergite polished and with only the most feeble indication of sculpture ; hind tibia reddish and becoming infuscate over fully apical third.

Second discoidal cell deep (Text-fig. 24) . . . . ***lugubris*** Ruthe (p. 16)

– Preapical segment of the flagellum fully twice as long as wide ; hind femur with a well marked band of fine aciculation in apical half on inner side ; apical, horizontal part of 1st tergite with strong rugosity ; hind tibia straw-yellow but becoming infuscate on about apical fifth . . . . ***cebes*** sp. n. (p. 18)

27 All, or most, of basal half of flagellum yellow or reddish yellow and sharply contrasting with an entirely dark scape.

Spp. with tergite (2+3) yellow or reddish yellow. 28

– Flagellum entirely dark or if pale, then tergite (2+3) is entirely, or almost entirely, dark 29

28 Flagellum short, thick, the preapical segment not more than one and a half times longer than wide ; hypopygium small, inconspicuous ; 1st tergite narrow, fully twice as long as wide at middle, almost parallel-sided, dull and quite strongly rugose ; anal vein of hind wing reaching distinctly beyond the middle of the vannal lobe (Text-fig. 15) . . . . . . ***trochanterata*** Thomson (p. 19)

– Flagellum longer, the preapical segment twice as long as wide ; hypopygium very large and strongly produced (Text-fig. 26) ; 1st tergite broader and a little shorter than in *trochanterata* ; more obviously narrowed apically, less rugose and frequently in part reddened ; anal vein of the hind wing not distinctly reaching beyond the middle of the vannal lobe (Text-fig. 17) . . . . ***calcarata*** Thomson (p. 19)

29 Flagellum pale on fully basal half ; 1st tergite almost parallel-sided.

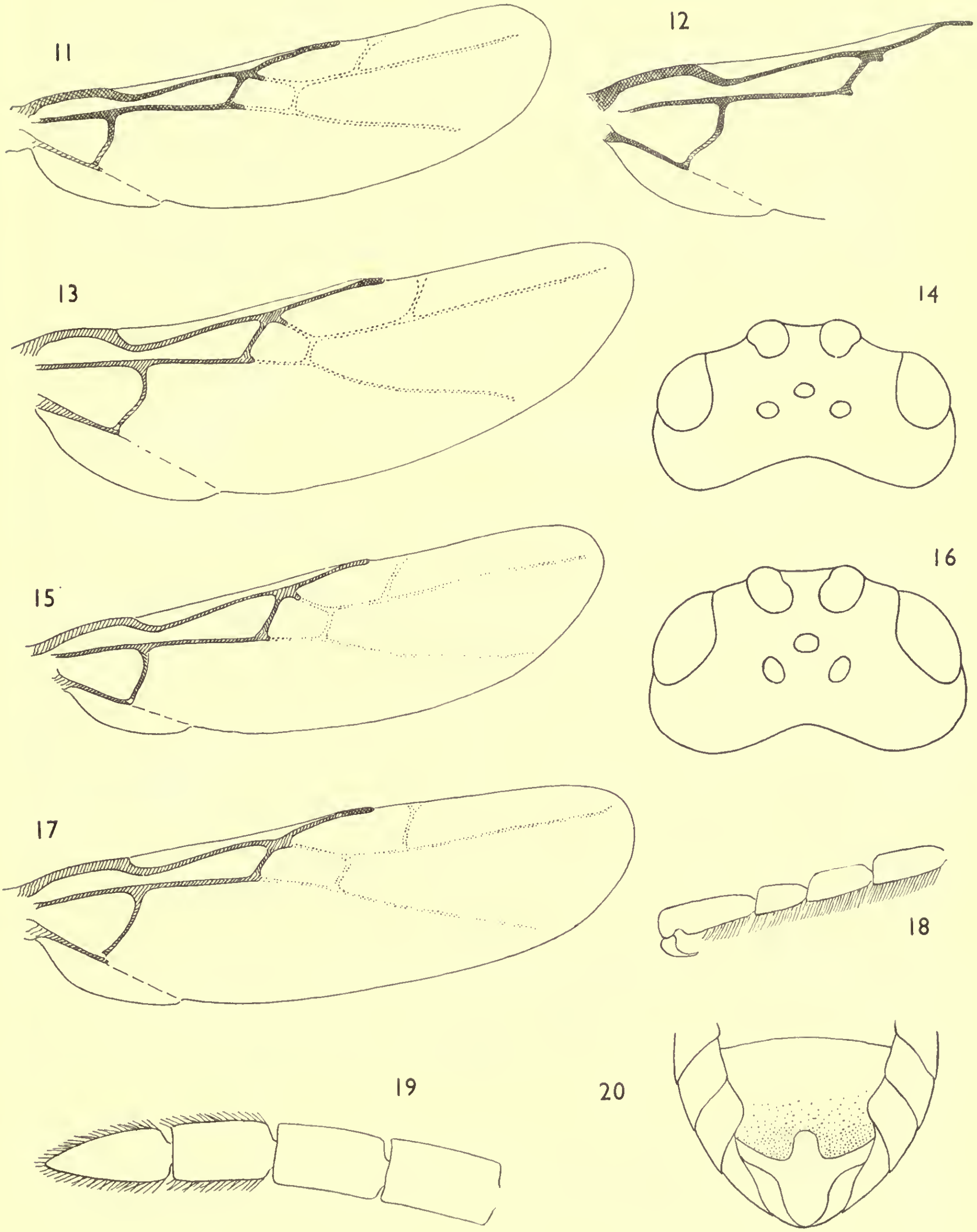
Flagellum somewhat short, the preapical segment about one and a half times longer than wide ; hind tarsus virtually as yellow as its tibia ***mandibularis*** Thomson (p. 15)

– Flagellum virtually blackish throughout, sometimes slightly pale beneath in *tuberculifera*.

Spp. with 1st tergite always much longer than wide, strongly tapered apically and ending in a polished knob 30

30 Antenna very distinctly shorter than the body, its preapical segment hardly one and a half times longer than wide ; sculpture of the mesoscutum reduced, the lateral lobes shining and almost polished . . . . . ***naenia*** sp. n. (p. 14)

– Antenna about as long as the body, the preapical segment hardly less than twice as long as wide ; sculpture of the mesoscutum not reduced, the lateral lobes dull and with fine rugosity everywhere 31



FIGS 11–20. *Microplitis*, ♀: hind wing of 11, *spectabilis* Haliday. 12, *tristis* Nees. 13, *sispes* sp. n. 14, *sispes* sp. n., head (dorsal). 15, *trochanterata* Thomson, hind wing. 16, *idia* sp. n., head (dorsal). 17, *calcarata* Thomson, hind wing. 18, *tuberculifera* Wesmael, ♂, front tarsus. 19, *viduus* Ruthe, ♀, apical flagellar segments. 20, *ocellatae* Bouché, ♀, apex of gaster (ventral).

31 First tergite very narrow, about three times as long as its middle width ; pubescence of flagellum slightly longer, the sparse, erect bristles at middle and apex of segments slightly longer and more conspicuous ; pale parts of the legs almost straw-yellow ; hind tibia usually with well defined infuscation at extreme apex ; ♂ with long, dense pubescence beneath front tarsus (Text-fig. 18)
tuberculifera Wesmael (p. 17)

– First tergite less narrow, about twice as long as wide and ending in a much less conspicuous knob ; pubescence of flagellum slightly shorter, the erect bristles less noticeable ; pale parts of the legs more deeply yellow ; hind tibia usually without apical infuscation ; ♂ without such pubescence beneath front tarsus
mediator Haliday (p. 18)

Microplitis heterocera (Ruthe)

Microgaster heterocera Ruthe, 1860 : 135.

♀. Fore wing strongly darkened on proximal half ; a very dark cloud beneath the stigma ; stigma dark brown, with only the faintest indication of a pale basal spot ; basal quarter of hind wing hyaline.

Head strongly transverse and clearly widened behind the eyes ; the surface between the ocelli and the eyes very shiny, only weakly rugose. Flagellum very short, much thickened basally ; 1st flagellar segment distinctly less than twice as long as wide ; preapical segment about one and one third times longer than wide.

Lobes of mesoscutum polished and almost unsculptured ; notaulices deep, flowing behind into an area of striate rugosity. Scutellum highly polished, with a few weak punctures laterally. Legs short, thick, the front femur strongly swollen ; inner spur of the hind tibia reaching slightly beyond the middle of the hind basitarsus. Metacarp unusually short, distinctly shorter than its distance from the apex of the radial cell ; stigma broad ; 2nd discoidal cell rather short and wide ; vannal lobe rather large.

Gaster appearing very shiny, owing to sparseness and shortness of hairs ; 2nd suture straight and defining tergite 2 which is short and without pale areas anterolaterally.

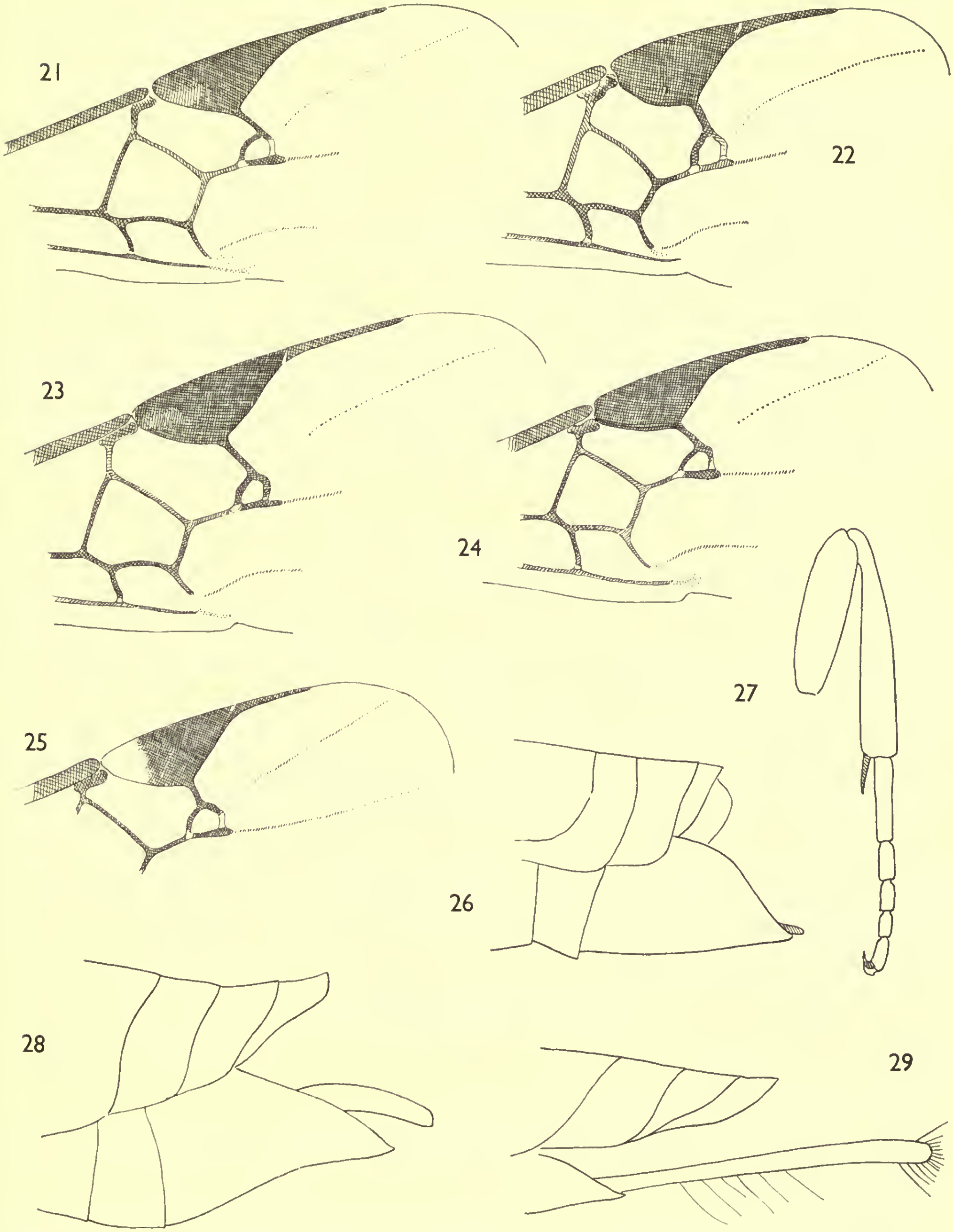
Length : *c.* 3·3 mm.

The above notes are based on the single female bred in Czechoslovakia by Capek. The type, which is in the BMNH, has the gaster and hind legs missing and scutellum and posterior part of the mesoscutum destroyed by a pin. In this female, the front femur is entirely pale ; the pale parts of the legs are paler than those of the female bred by Capek but this may be due to fading for the type is more than one hundred years old.

Material examined. GERMANY : Berlin, Type ♀ in BMNH (Ruthe Coll.). CZECHOSLOVAKIA ; Sturovo, 1 ♀, bred 20.v.1964 from *Dicycla oo* Linn. (*M. Capek*).

Host : *Dicycla oo* Linn. (Noctuidae). Cocoon greyish-white, without ribbing.

I have examined two males, old and faded and labelled ' Conchylis zebrana. O. Hofman ' from the Naturhistorisches Museum, Vienna, that I am confident belong to this species. One specimen has the first tergite slightly widened to apex, the other more so ; in both specimens, this tergite is broadly polished and smooth along middle and across apex ; the hind tibiae are dirty yellow and the hind tarsi almost as pale. I am labelling these two specimens as ' heterocera Ruthe '.



FIGS 21–29. *Microplitis*, ♀ : fore wing of 21, *cebes* sp. n. 22, *sordipes* Nees. 23, *eremita* Reinhard. 24, *lugubris* Ruthe. 25, *spectabilis* Haliday. 26, *calcarata* Thomson. 27, *aduncus* Ruthe, ♀, hind leg. 28, *xanthopus* Ruthe, ♀, apex of gaster (lateral). 29, *sispes* sp. n., ♀, ovipositor sheath (lateral).

Microplitis spectabilis (Haliday)
(Text figs. 11, 25)

Microgaster spectabilis Haliday, 1834 : 236.
Microplitis spectabilis (Haliday) Reinhard, 1880 : 359.
Microgaster parvulus Ruthe, 1860 : 139. [Syn. Reinhard, 1880 : 359].

♀. Tegula yellow. Wings often almost uniformly hyaline ; if the fore wing shows faint infuscation, then it is still strikingly paler than that of the related *tristis*.

Head, seen from above, rather deep from back to front ; its upper surface evenly and, for the size of the insect, rather strongly rugose. Flagellum rather thick, somewhat smooth-looking towards apex ; preapical segment from one and one third to one and a half times longer than wide.

Mesoscutum more strongly sculptured than in *aduncus*, a species of similar size ; its sculpture neither weak nor strong and hence not at all characteristic. Scutellum becoming strongly shining over most of its median surface and only vaguely sculptured. Stigma decidedly broad ; abscissa 1 of the radius never longer than the transverse cubitus, usually distinctly shorter ; vannal lobe small (Text-fig. 11). Hind tibia, seen from the side, a little dilated before apex ; hind femur without trace of a hair-line.

♂. Flagellum apparently always at least slightly paler beneath.

Length : 2·6–2·8 mm.

Material examined. GERMANY : Berlin district (Ruthe coll. in BMNH). ENGLAND : Kent, Bexley, long series bred 17.v.1961 from Noctuid larva found ix.1960 (*R. L. E. Ford*) ; Gravesend, series bred v.1938 from larva of *Meristis trigrammica*, found viii.1937 (*R. L. E. Ford*). Hants, New Forest, series bred from *Dyschorista fissipuncta* (Lyle coll. in BMNH). MOROCCO : Gt. Atlas Mts., 1 ♂ ; this male has the hind femur entirely yellow.

Host : *Dyschorista fissipuncta* Haworth, now *Enargia ypsilon* Denis & Schiffermüller ; *Meristis trigrammica* Hufnagel, now *Charanyca trigrammica* Hufnagel. A gregarious parasite, spinning a loose heap of brown, unribbed cocoons.

This species is largely characterized by the broad, bicoloured stigma and the general appearance of the 1st tergite. Another feature of some assistance in identification is the dull, reddish or dingy yellow hind tibia with its complete absence of apical infuscation. The male differs from that of *aduncus* in not having the head widened behind the eyes.

Microplitis aduncus Ruthe
(Text-fig. 27)

Microgaster aduncus Ruthe, 1860 : 129.
Microplitis aduncus (Ruthe) Reinhard, 1880 : 359.

♂ ♀. A dark-legged species ; hind femur dark brown ; all tibiae yellowish brown ; the hind tibiae almost as brown as their femora in one male (Arolla). Stigma weakly yellowish on basal quarter to basal third.

♀. Head conspicuously widened behind the eyes. Antenna very short, with segments 14–17 only very slightly longer than wide ; flagellum not noticeably thickened basally, its 1st segment fully twice as long as wide.

Mesoscutum shiny, its sculpture much reduced ; the surface (for the genus) smooth-looking but duller along the course of the notaulices and behind. Scutellum almost polished but with some weak punctation. Radius very obliquely placed on the stigma. Legs short, thick, especially the front femur ; hind femur without trace of a hair-line or fine, parallel aciculation ; inner spur of the hind tibia almost reaching to middle of hind basitarsus (Text-fig. 27).

Vannal lobe small, narrow.

Tergite 1 almost smooth, distinctly narrowed behind. Gaster otherwise having an evenly convex, highly polished appearance ; its setae short, inconspicuous compared with the majority of the species.

♂. Differs from that of *spectabilis* in having the head markedly widened behind the eyes.

Length : ♂ ♀, *c.* 2·8 mm.

Material examined. FINLAND : Jomala, 1 ♀ (*W. Hellén*). SWEDEN ; Skåne, 1 ♀ (*D. M. S. & J. F. Perkins*). SWITZERLAND : Arolla, 1 ♀, 1 ♂ (*R. B. Benson*).

Type in the BMNH.

Like *spectabilis*, this species has the hind tibia uniformly dull brownish red. The two species are probably closely related and are most readily separated on the thickness of the front femur, the shape of the head and the shorter hind tarsus of *aduncus* with its relatively longer tibial spur.

In many respects *aduncus* is transitional between the more generalized *spectabilis* and the extreme *heterocera*.

Microplitis tristis Nees

(Text-fig. 12)

Microgaster tristis Nees, 1834 : 168.
Microplitis tristis (Nees) Reinhard, 1880 : 359.
Microplitis dolens Marshall, 1885 : 232. [Syn. Telenga, 1955 : 164.]

♀. Wings strongly embrowned, darker than in any other species but with conspicuous, yellow patch at base of stigma. Hind tibia uniformly dull reddish.

Scutellum strongly shining and almost smooth over its greater, medial part.

Setae of the gaster comparatively short and sparse. First tergite sometimes slightly widened apically, its sculpture weak, the general surface smooth-looking and shiny.

EUROPE. Probably common.

Host : *Hadena cucubali* Fuessly ; *Hadena capsincola* Hübner (now synonym of *H. bicruris* Hufnagel). Material from both these noctuid hosts in BMNH. I have seen series belonging to the Naturhistorisches Museum, Vienna, labelled as bred from *Plusia moneta* Fabr.; and *Plusia consona* Fabr. (Reinhard Coll.) (Noctuidae). A gregarious parasite, making greyish brown cocoons, without longitudinal ribs.

This species is characterized essentially by the brown wings and curved basal vein of the hind wing.

Microplitis ocellatae (Bouché)

(Text-figs 10, 20)

Microgaster ocellatae Bouché, 1834 : 161.
Microplitis ocellatae (Bouché) Reinhard, 1880 : 358.

This species is rather easily recognized by the deeply emarginate apex of the apical ventrite of the female (Text-fig. 20). The short, broad, very smooth-looking first tergite is also characteristic (Text-fig. 10).

N. W. EUROPE. JAPAN (two examples in BMNH bred from *Smerinthus planus* Walker, det. Watanabe).

Host : Sphingidae. *Smerinthus ocellatus* L., *Smerinthus planus* Walker ; *Laothoe populi* L., *Mimas tiliae* L. A gregarious parasite ; the numerous, dark, greyish brown cocoons, unribbed, are loosely heaped together around the body of the host-caterpillar.

Microplitis idia sp. n.

(Text-figs 6, 16)

♀. Wings faintly darkened ; stigma evenly brown ; tegula dark brown. Front and middle tarsus yellow.

Head strongly transverse and clearly a little widened behind the eyes (Text-fig. 16). Clypeus flattened, rather shiny. Maxillary palpus rather long, the distal four segments together as long as the front tarsus.

Sculpture of the mesoscutum on the whole very fine, except for the roughened, notaulic bands. Areolet of the fore wing very obviously four-sided.

Tergite 1 about one and one third times longer than wide, flattened, very feebly sculptured and shiny ; very slightly narrowed apically but this hardly detracts from its essentially rectangular appearance (Text-fig. 6). Hypopygium without trace of an apical emargination.

Length : *c.* 4 mm.

Type ♀. SWEDEN : Skåne, Skäralid, 3.vii.1938 (*D. M. S. & J. F. Perkins*), BMNH.

This species is chiefly characterized by its reduced sculpture and long, thin flagellum. Probably closely related to *ocellatae*, from which it differs at once in shape of hypopygium. Like *ocellatae*, it may turn out to be a gregarious parasite.

Microplitis naenia sp. n.

♀. Wings virtually hyaline ; stigma with only a very weakly indicated basal spot ; tegula yellow or at least pale. Hind femur black in two out of four females (including the type) but yellow with basal infuscation in two others ; hind tibia infuscate almost throughout in type but with pale, basal ring ; in remaining females the hind tibia is yellow with extreme apical infuscation, more noticeable above.

Head distinctly widened behind the eyes.

Mesoscutum shiny, very weakly rugose for the genus ; notaulic courses indicated as dull, finely rugose bands ; these bands flow into a posterior area of fine rugosity in which there are traces of weak longitudinal striation (three females, Czechoslovakia). Scutellum flattened, shiny, a little less polished than in *aduncus* and with fine, superficial punctation. Sculpture of propodeum less coarse than in *aduncus*. Metacarp slightly longer than its distance from the apex of the radial cell and distinctly longer than the interior, distal margin of the stigma. Inner side of the hind femur without a hair-line. Mesosternal suture very narrow, hardly or only very weakly foveate. Mesopleural furrow long, narrow, sharply discrete.

First tergite about twice as long as wide, markedly narrowed apically, its sculpture on the whole very fine and tending to fade out altogether on the apical, turned over part of the segment ; rest of gaster highly polished, with very inconspicuous setae ; tergite (2+3) with a feebly indicated, raised median field ; 2nd suture very weakly indicated but markedly bisinuate.

Length : *c.* 3·2 mm.

Type ♀. ENGLAND : Gloucester, High Meadow Woods, 4.vi.1936 (*E. B. Britton & J. F. Perkins*), BMNH.

Paratypes. CZECHOSLOVAKIA : Sturovo, 2 ♀, 5.v.1962, ex *Taeniocampa pulverulenta* (*M. Capek*) ; Banska Stiavnica, 1 ♀, 1954—4.v.1955, ex *Scopelosoma satellitium* (*M. Capek*), Kalvaria, 1 ♀, 20.v.1959, ex *Scopelosoma satellitium* (*M. Capek*) ; 1 ♀, labelled ' Tschek. 1872 ' in Naturhistorisches Museum, Vienna.

Host : *Taeniocampa pulverulenta* Esper (now *Orthosia cruda* Schiffermüller) ; *Scopelosoma* (now *Eupsilia*) *satellitia* L. (*Noctuidae*). Cocoon brown with conspicuous white ribs, solitary.

Although this species could be confused with *aduncus* because of the shape of the head and the short antenna, it is, on the other hand, probably fairly closely related to *idia*, having like that species a relatively large vannal lobe and greatly reduced thoracic sculpture. It differs from *idia* on antennal structure and the shape of the first tergite.

Microplitis mandibularis Thomson

(Text-fig. 1)

Microplitis mandibularis Thomson, 1895 : 2251.

♂ ♀. At least the basal third of the stigma very pale yellow. Legs, excluding the hind coxae, entirely pale yellow.

♀. Sometimes tergite (2+3) is much marked with yellow ; such females can easily be confused with those of *mediator* ; but in *mediator* the hind tarsus is always strongly infuscated, the flagellum is always blackened and tergite 1 is more strongly narrowed behind.

Inner side of the hind femur with a very weakly defined hair-line, the whole of the femoral area ventral to the line tending to be smooth and highly polished.

Tergite 1 is almost parallel-sided (Text-fig. 1), smooth-looking, except at apex, its sculpture very weak.

♂. Flagellum pale throughout though this is sometimes more obvious on the underside. This character alone will separate the species from *tuberculifera*. Front tarsus densely fringed beneath with pale pubescence, similar to that which occurs in the males of *tuberculifera* ; this pubescence is more easily seen and appreciated in larger males.

Length : ♂ ♀, 2·4–3·2 mm. Very variable in size.

Common and widely distributed in N. W. Europe.

Host : A gregarious parasite of *Jodio croceago* Fabr. (pupated 28.vi ; emerged 7.vii) ; *Lampra fimbriata* Schreber (pupated 26.iii ; emerged 17.iv) ; (Noctuidae) ; both series from S.E. ENGLAND in BMNH.

My interpretation of this species is based on an examination of the type-series in Lund in 1948.

Microplitis sispes **sp. n.**

(Text-figs 7, 13, 29)

♀. Black ; tergite (2+3) with paler, antero-lateral areas. Wings entirely hyaline ; stigma dark brown throughout. Hind femur and hind tibia entirely reddish yellow in paratype ; in holotype, the hind femur shows extremely faint infuscation at extreme base.

Head very strongly characteristically transverse, a little widened behind the eyes (Text-fig. 14). Surface of frons and vertex somewhat shining, their sculpture fine for the genus. Antenna long, thin ; preapical segment of flagellum twice as long as wide (holotype), broken in paratype ; pubescence of flagellum extremely fine and not in the least upstanding. Ocelli in a low triangle, the posterior tangent to the anterior ocellus touching the posterior pair.

Sculpture of the thorax greatly reduced, the general surface very smooth-looking compared with the other species dealt with in this paper. Mesoscutum finely rugose, faintly shining; notaulices showing as narrow, dull bands of rugosity, that posteriorly flow into a large area of similar rugosity; this posterior area is dull but without the raised rugosities found in most other species. Scutellum shining, smooth, weakly punctate. Mesopleurum with a narrow sharply defined sternaulus; the surface below the furrow strongly shining and weakly punctate. Mesosternum rugulose, the medial suture very narrow, not obviously foveate. Wings rather large; hind wing with relatively large vannal lobe (Text-fig. 13).

Tergite 1 twice as long as its basal width, gradually narrowed to apex (Text-fig. 7), weakly rugose mostly along sides and ending apically in a polished knob. Ovipositor sheath very narrow, about as long as the hind basitarsus and projecting beyond the apex of the gaster by a length equal to the 2nd segment of the hind tarsus (Text-fig. 29).

Length : ♀, 4 mm., without ovipositor sheath.

Type ♀. GERMANY : Hanover, 22.v.1943, ex *Taeniocampa stabilis* (*R. Hinz*), BMNH.

Paratypes. 1 ♀, same data as above but 1953. CZECHOSLOVAKIA : Sikenica, 1 ♀, 2.v.1966 ex *Taeniocampa stabilis* (*M. Capek*).

Host : *Taeniocampa stabilis* Vieweg (Noctuidae). Cocoon brown, tough, with strong, even, longitudinal ribs.

Easily distinguished from all the other species in this paper by the narrow, strongly exserted ovipositor sheath. In general reduction of sculpture, *sispes* resembles *idia* but the shape of the 1st tergite is different and the clypeus is not at all flattened.

Microplitis lugubris (Ruthe)

(Text-fig. 24)

Microgaster lugubris Ruthe, 1860 : 135.
Microplitis lugubris (Ruthe) Reinhard, 1880 : 359.
Microplitis borealis Marshall, 1885 : 237, **syn. n.**

♀. A very dark species. Palpi blackish. Fore wing markedly and uniformly smoky; stigma dark brown throughout. Middle and hind femora blackish; hind tibia becoming gradually infuscate distal to middle, more especially on external side; otherwise reddish brown.

Antenna rather short, with the three preapical segments varying from almost square in outline to about one and one quarter times longer than wide.

Mesoscutum finely rugose; notaulices showing as slightly rougher, rugulose bands but not impressed; posterior part of mesoscutum finely, intricately rugose-reticulate. Scutellum strongly shining and with a variable amount of punctation. Metacarp very slightly shorter than its distance from the apex of the radial cell (Text-fig. 24).

Tergite 1 strongly, evenly narrowed to apex, polished, almost smooth. Gaster having a very shining appearance owing to hairs being short and reduced almost to a single row on each segment; the ill-defined tergite 2 with a blister-like swelling medially and with a pale, semicircular membranous area at each antero-lateral corner. Hypopygium large and in dead specimens, at any rate, projecting slightly beyond the apex of the gaster.

♂. Like the female except for the sexual differences.

Length : ♂ ♀. ca. 3·2 mm.

N. W. EUROPE. Widely distributed.

In a series of 13 males (SWITZERLAND : Valais and Engadine), the sculpture of the scutellum is very variable, some specimens having it finely rugose all over with gradations between this condition and the shiny, predominantly punctate surface found in the scutellum of the female.

All specimens that I have identified as this species were taken in June.

Characterized in both sexes by the position of the radius where it leaves the stigma and the shape and polished surface of the 1st tergite. The short antenna of the female helps to make this sex particularly easy to identify.

The types of both *lugubris* and *borealis* are in the BMNH.

Microplitis tuberculifera (Wesmael)

(Text-figs 3, 4, 18)

Microgaster tuberculifera Wesmael, 1837 : 43.
Microplitis tuberculifera (Wesmael) Reinhard, 1880 : 359.

Females of this species are easily confused with those of *mediator*. That the two species are distinct is amply shown by the pubescence of the underside of the front tarsus of the male ; in the male of *tuberculifera*, the underside of the front tarsus is densely fringed with white silky pubescence (Text-fig. 18).

In addition to the characters given in the key, *tuberculifera* may be compared with *mediator* as follows :—

♀. More brightly coloured. Front and middle coxae usually entirely yellow and the hind coxa is frequently splashed with yellow beneath ; in *mediator*, the hind coxa is always blackish and the two front pairs are infuscated.

Sculpture of posterior part of mesoscutum reduced, the surface being often predominantly granulate ; in *mediator*, the posterior part of the mesoscutum shows raised rugose-reticulation. The thoracic pubescence of *tuberculifera* is more conspicuous, more silky and paler (almost whitish) than in *mediator*.

Tergite 1 considerably longer and narrower than in *mediator*, but evidently very variable in shape (Text-figs 3, 4).

Length : 3·6 mm.

N. W. EUROPE. Common and widespread.

Host : Solitary parasite of various Noctuidae. *Plusia chrysitis* L., *Phalaena typica* L., *Taeniocampa stabilis* Vieweg. Cocoon similar to that of *mediator*.

A series of sixteen females from various localities in Skåne, Sweden are smaller in size than females from the British Isles with relatively larger head and narrower petiole. I was at first inclined to regard these and a corresponding series of males as a species distinct from *tuberculifera*. Nevertheless, I have several females from Skåne that seem to be intermediate between the extreme Swedish series and the rest and in consequence I prefer to regard the whole of the material as belonging to one species, or species-aggregate, characterized in the male by the pubescence on the underside of the front tarsus.

Microplitis mediator (Haliday)

Microgaster mediator Haliday, 1834 : 235.
Microplitis mediator (Haliday) Reinhard, 1880 : 359.
Microgaster medianus Ruthe, 1860 : 127. **Syn. n.**
Microplitis medianus (Ruthe) Reinhard, 1880 : 359.

The difficulty of finding a combination of characters for separating the female of this species from that of *tuberculifera* has already been discussed under the latter species. Most of the differences have been given in the key ; there is little to add.

♀. Slightly smaller and more compact in build. Although generally a darker insect, this species tends to be more brightly coloured than *tuberculifera* ; sometimes tergite (2+3) is entirely reddish yellow but I am unable to relate this either to locality or any other factor. Females with pale marked gaster could be confused with *mandibularis* but in this species the segments of the flagellum are shorter.

The mesosternal suture is deeper and more obviously costate in this species than in *tuberculifera* ; this applies also to the males. The mesoscutum of *mediator* posteriorly shows a strong tendency to develop raised reticulate rugosities.

♂. Distinguished from that of *tuberculifera* by the absence of erect silky pubescence on the underside of the front tarsus.

Widespread and common in N.W. EUROPE.

Host : *Orthosia miniosa* Fabr., *Phalaena typica* L., *Amathes xanthographa* Fabr., *Cucullia verbasci* L., (Noctuidae).

A solitary species, making a greenish grey or brownish grey, feebly ribbed cocoon.

In spite of all I have said above and even with the abundance of material that I have had at my disposal, I cannot claim to have defined clearly the limits of this species and *tuberculifera*.

***Microplitis cebes* sp. n.**

(Text-fig. 21)

♀. Palpi dark throughout. Tegula dark brown. Wings more or less hyaline and without darker patches ; stigma with faint, pale, basal spot. Hind femur black or blackish (decidedly black in holotype) ; hind tibia somewhat pale yellow but infuscate in about apical fifth.

Antenna markedly long, somewhat tapered distally ; the preapical segment fully twice as long as wide. Sculpture of vertex and temples somewhat coarse in comparison with the related *tuberculifera*.

Notaulices defined by bands of coarse reticulation and posteriorly flowing into a large area of somewhat wide-meshed reticulation ; in this respect, the species differs from the *tuberculifera-mediator* complex in which the mesoscutal sculpture tends to be much more even, without or with hardly emphasized notaulic bands. Scutellar shield a little smoother and a little more shiny medially. Mesopleural furrow sharply delimited throughout. Wings : 1st abscissa of the discoideus distinctly a little less than half as long as the 2nd (Text-fig. 21) ; metacarp as long as or slightly longer than its distance from the apex of the radial cell ; vannal lobe relatively larger than in *tuberculifera* and distally less obviously wedge-shaped. Hind femur on its inner side with fine hair-line in apical half, bordered above by narrow band of extremely fine aciculation.

Tergite 1 more or less evenly narrowed to apex and with conspicuous, apical, polished knob.

♂. Like the female, except that the hind femur may in part become suffused with paler colouring (1 ♂, Volosca). The underside of the anterior tarsus shows the normal short pubescence of the genus (but cf. *tuberculifera*).

Length : ♂ ♀, 3·8–4·0 mm, larger than *tuberculifera*.

Type ♀. SWITZERLAND : Valais, near Verbier, 5000–6000 ft, 25–28.vi.1959 (*J. E. & R. B. Benson*), BMNH.

Further material, paratypes. AUSTRIA : Lunz, 1 ♀ ; S. Tyrol, Radein, 1 ♀, both in Naturhistorisches Museum, Vienna. JUGOSLAVIA : Istria, Volosca, v., 1 ♂, 1 ♀, in Nat. Mus. Vienna. CZECHOSLOVAKIA : Tatranska Polianska, Tatra Mts, 28.v.1932, 1 ♂, in BMNH. SWITZERLAND : Valais, Les Haudières, 4800 ft, 7.vi.1935, 1 ♂ in BMNH.

I am confident that *cebes* is a good species. What characterizes it is not easily put into words, though size, long flagellum of female, shape of first tergite and especially the shortness of the 1st abscissa of the discoideus all play a part. In general facies, the species is like *tuberculifera* and *mediator* but in having stronger mesoscutal sculpture approaches the *viduus-ruricola* complex. It is noteworthy that all the material available is from mountainous regions in Central Europe.

Microplitis trochanterata Thomson

(Text-fig. 15)

Microplitis trochanterata Thomson, 1895 : 2249.

♂ ♀. This species is essentially characterized in both sexes by the narrow, parallel-sided, strongly rugose petiole ; the rugosity of the petiole has a characteristic evenness. The unusually small vannal lobe of the hind wing is also a feature (Text-fig. 15) ; the anal vein reaches very distinctly beyond the middle of the vannal lobe.

In 25 Swedish males examined, the hind femur, with two exceptions in which it is flushed with red along sides, is entirely dark brown ; the middle femur is usually sharply darkened on about basal half. Palpi infuscate, never yellow as in *mediator*.

Unlike *calcarata*, the mesoscutum along the course of the notaulices and within a large, posterior area, shows an intricate rugose-reticulation ; the granulate sculpture, so much a feature of *calcarata*, is absent in *trochanterata*.

The general appearance of the petiole is remarkably constant in all specimens examined, of both sexes.

♀. Striking on account of the appearance of the antenna ; the flagellum is thick, rather short, the first 8–9 segments bright yellowish ; the preapical segment is about one and one third times longer than wide ; scape dark brown. Hind femur with more or less distinct hair-line, bordered anteriorly by 2–3 delicate striations.

SWEDEN : various localities in Skåne, 25 ♂, 3 ♀. ENGLAND : Hants, Stockbridge, 1 ♂ ; Cornwall, Botusfleming, 1 ♂ ; Herts, 2 ♂ ; Cambridge, 1 ♂. All specimens taken in late June and July. I have seen the type of this species.

Microplitis calcarata Thomson

(Text-figs 17, 26)

Microplitis calcarata Thomson, 1895 : 2249.

This species, the type of which I have seen, is easily recognized in the female by the strongly produced hypopygium and the largely fulvous flagellum. Of the five females I have seen (Finland, 4, England, 1) all have tergite (2+3) reddish yellow and the hind coxa red ; one (England) has tergite 1 red. The males usually have tergite 1 blackened but occasionally it is wholly or in part reddened ; the hind femur is dull red. The wings in both sexes are brownish and the stigma shows hardly a trace of pallor at base. The petiole in both sexes tends to become smoother along the middle line towards apex and here is somewhat greasy-looking.

Inner side of hind femur of female without any kind of modification.

Material examined. FINLAND (both sexes). GERMANY (males). ENGLAND : Hants and Cambridge (males). SWEDEN (males). FRANCE. HOLLAND. Only one British female seen, S. ENGLAND, with stout, unevenly ribbed cocoon.

All specimens taken in May, July and August.

Microplitis fordi sp. n.

♀. Wings virtually hyaline ; stigma more or less evenly dark brown, sometimes very faintly paler at base ; tegula black. Hind femur black ; middle femur black but sharply yellowish on apical quarter ; hind femur predominantly yellow ; at most faintly darkened in apical quarter, above.

Antenna long, rather thick, the preapical segment about one and one third times longer than wide ; flagellum not at all bristly.

Notaulices not or hardly impressed but their course marked by a band of coarser rugosity. Scutellum sculptured all over. Prescutellar fovea markedly bowed, the lateral costae being shorter than the medial ones. Propodeum more or less evenly convex, its reticulate sculpture considerably finer and closer than in the species belonging to the *spinolae-fumipennis* complex. Inner side of the hind femur with distinct ridge.

Tergite 1 about one and two thirds longer than wide, its sculpture on the whole rather fine, slightly narrowed at extreme apex and here with transverse polished swelling rather than a rounded knob.

♂. Sometimes the hind femur faintly flushed with red on inner side.

Length : ♂ ♀, *c.* 3·2 mm.

Type ♀. ENGLAND : Kent, Dartford Heath, ex *Chesias legatella*, emerged 17.vi.1953 from cocoon found 20.v.1953 (*R. L. E. Ford*), BMNH.

Paratypes. Same data as above, 36 ♀, 23 ♂.

Further material. ENGLAND : Surrey, Barnes, 10 ♀, 24 ♂, bred viii.1968 from *Chesias rufata* (*C. Wall*). ENGLAND : no locality, 7 ♀, 2 ♂, bred 29.xii.1892 from *C. oblicuaria* (now *Chesias rufata*). Hants., New Forest, 26.v.1958, 1 ♀ (*J. Clark*). SCOTLAND : Aviemore, 2 ♂, bred viii–ix.1936, ex *Thera juniperata* (*R. L. E. Ford*).

Host : *Chesias legatella* Schiffermüller ; *Chesias rufata* Fabr., on Broom (*Cytisus*). *Thera juniperata* L. (All Geometridae).

The cocoons of the early summer generation are grey, evenly fusiform and without emphasized ribs ; those of the later generation from *rufata* tend to be more pointed at each end and have sharply emphasized, whitish ribs.

I have been much puzzled by a series of specimens in the BMNH bred from *Euclidia mi* Clerck (Plusiidae) from the following localities : ENGLAND : Kent, Sevenoaks, 1 ♀, bred 20.vi.1925. Cambridge, Gog Magog Hills, 1 ♀, bred 8.v.1920, 1 ♂, bred 25.iv.1920 (G. T. Lyle Coll. in BMNH). Lincs, Limber, 1 ♂, 29.iv.1915

(*Cockayne*). Sussex, Hailsham, 10.vi.1953, 1 ♂, (no host !) (*R. L. E. Ford*) ; Eastbourne, 1 ♀, bred 25.v.1915.

All females recorded as having been bred from *Euclidia mi* differ slightly from *fordi* in that the preapical segment of the flagellum is always fully twice as long as wide. The ocelli, too, are placed slightly further from the eye, the distance between a posterior ocellus and the eye-margin being slightly greater than twice the diameter of the posterior ocellus ; in *fordi*, this distance is generally slightly less than twice the diameter of the posterior ocellus.

The cocoons of specimens from *Euclidia mi* are exactly like those of *fordi* from *Chesias rufata*. It is possible that *fordi* parasitizes *Euclidia mi* as well as *Chesias rufata* in late summer, though I do not rule out the possibility that two very closely related species may be involved. I should incline more to this view were it not for certain females of *fordi* bred from *Chesias* that approach very closely these specimens from *Euclidia mi* in respect to the two characters mentioned above.

Lyle, who named the specimens he had from *Euclidia mi* as *viduus* Ruthe (1914 : no page number) states that the parasites spend the winter in the larval state within their cocoon and emerge in April and May. This being so, the host *Chesias legatella* would be available to them.

Males of *Microplitis* are always difficult to identify but I think I have correctly named the two from Scotland. Their having been bred from *Thera juniperata* indicates that there is still much to be clarified concerning the range of hosts of *fordi*.

Microplitis fordi is very close to *viduus*, the main difference being the pubescence of the flagellum of the female.

With regard to coloration, the rather pale yellow hind tibia of *fordi* contrasts sharply with the black femur and is a useful aid towards recognizing the species.

Microplitis sofron sp. n.

A small species, similar in colour to *fordi*, with which it may be compared as follows :—

♀. Antenna rather thin with the preapical segment twice as long as wide. Raised, rugose-reticulations of the posterior part of the mesoscutum more in evidence than in *fordi*. Vannal lobe relatively smaller. Tergite 1 narrower and more obviously narrowed behind.

♂. Like the female and separable from the male of *fordi* virtually only on wing details.

Length : ♂ ♀, *c.* 3 mm.

Type ♀. SWEDEN : Skåne, Löderup, vii.1938 (*D. M. S. & J. F. Perkins*), BMNH.

Further material, paratypes. SWEDEN : Löderup, vii.1938, 2 ♀, 1 ♂. ENGLAND : Kent, Dartford Heath, 1–7.v.1958, 2 ♀, 7 ♂, v.1937. 1 ♂, ex *M. cespitis*, 1.vi.1949, 1 ♂, swept from flowers of *Cytisus*, 1.viii.1937, 1 ♀, with cocoon but no host data (all *R. L. E. Ford*). Hants, near Lyndhurst, 30.v.1955, 1 ♂ (*J. Clark*). ITALY : Laguna Venetia, 1 ♂ (*G. Soika*). SCOTLAND : MP, Duncaves and Ballingling, vii, 2 ♀ ; Aviemore, vi.vii, 1 ♂, 2 ♀ (all *A. W. Stelfox*). IRELAND : Kildare, v, 1 ♂, 1 ♀ ; Westmeath, Riverdale, vi, 1 ♀ ; Antrim, Bushfoot, vi, 1 ♂ (all *A. W. S.*).

Host : *Melanchra* (error for *Tholera* ?) *cespitis* Fabr. on the evidence of a single male. Cocoon pale brown, without obvious ribbing.

This species is characterized by the brightly bicoloured stigma and the obliquely placed radius. A comparison of data reveals that it frequently occurs with *fordi*.

Microplitis strenuus Reinhard

Microgaster gracilis Ruthe, 1860 : 142.
Microplitis strenuus Reinhard, 1880 : 360 (n. n. for *Microgaster gracilis* Ruthe, 1860, *nec* Curtis, 1830).

This species is extremely like *eremita*, differing from it by little more than the characters given in the key. But see discussion under *eremita*.

Material examined. ENGLAND : Cambridge, Fleam Dyke, 20.vii.1955, 1 ♀ (*R. L. E. Ford*) ; Herts, Brickett Wood, 13.vi.1943, 1 ♀, 17.iv.1957, 1 ♂ (*R. B. Benson*) ; Surrey, Dorking, 20.vi.1953, 1 ♂ (*G. J. Kerrich*), Newdigate, 2 ♀, emerged 8.vi.1959, ex *Episema caeruleocephala*, collected 23.v.1959 (*M. Schaffer*). GERMANY : neighbourhood of Berlin, type ♀, in BMNH. SWEDEN : Skåne, Kivik, 18.vii.1938, 1 ♀ (*D. M. S. & J. F. Perkins*). TURKEY : Ankara, 3000 ft, 26.vi.1959, 1 ♀ (*K. M. Guichard*) ; this female has the hind femur extensively infuscate along the dorsal surface.

Host : *Episema caeruleocephala* Linn. (Noctuidae). Cocoon rather small, evenly cylindrical, dark grey with greenish tint and without obvious ribbing ; hardly distinguishable from the cocoon of *fordi* from *Chesias legatella* but a little darker.

Apart from its deceptive resemblance to *eremita*, *strenuus* is characterized by the combination of long thin flagellum and bright reddish yellow tegula. It is less heavily built and less strongly sculptured than the *ruricola-viduus* complex and the wings are much more nearly hyaline.

Microplitis eremita Reinhard

(Text-fig. 23)

Microplitis eremita Reinhard, 1880 : 360.

♂ ♀. Tegula, hind tibia and hind femur bright reddish yellow. Wings almost hyaline ; only the merest trace of a cloud beneath the stigma ; stigma with only the merest trace of pallor at base.

♀. The flagellum is paler beneath with the articulations of the segments showing as faintly darker rings ; in *strenuus* the segments are more uniformly darkened. Fore wing (Text-fig. 23).

Material examined. AUSTRIA : 5 ♂, 2 ♀, all with their cocoon, bred from *Lithocampa ramosa*. One male and one female in BMNH ; rest in Naturhistorisches Museum, Vienna.

Host : *Lithocampa* (now *Callierges*) *ramosa* Esper (Noctuidae). Reinhard records the host as *Dryocampa ramosa*. The moth occurs in Central Europe but is not known from the British Isles. The remarkable cocoon is greyish brown and appears unusually long because of a somewhat flattened, basal pad that forms an extension of the cocoon and by means of which the cocoon is fastened to a twig ; the cocoon proper bears three dark, transverse bands.

The two characters that link *eremita* and *strenuus* are the yellow tegula and the long, thin flagellum. So deceptively alike are the two species that, without their cocoons, I should have regarded them as one.

The seven specimens of *eremita* are all labelled ' Silesia '. Two are dated ' December ' and two ' May ' and from this may be inferred, I think, that the species passes the winter in its very distinctive cocoon. The host-larva, *C. ramosa*, feeds in the autumn. If this host occurred in England, I should not hesitate to put forward the suggestion that a single species is present, spinning a tough, cryptic, winter cocoon (*eremita*) and a simple, unmodified, early summer cocoon (*strenuus*). How *strenuus* passes the winter is not yet known ; that it may parasitize an autumn feeding host related to *Callierges ramosa* and make a cocoon similar to that of *eremita* cannot be ruled out.

Microplitis viduus (Ruthe)

(Text-fig. 19)

Microgaster viduus Ruthe, 1860 : 134.
Microplitis viduus (Ruthe) Reinhard, 1880 : 358.

♀. The type is more than one hundred years old and is somewhat faded. The hind femur is brown but flushed with paler colouring on each side within apical half ; the hind tibia is entirely reddish yellow, without apical infuscation. Stigma evenly brown. Antennae missing.

A bred series that I confidently believe to be this species (England, Bucks, Slough) differs from the type in that the stigma shows a bright yellow patch at base, covering about basal third ; the hind femur is black in all five females and the hind tibia shows weak, apical infuscation.

In five females from the Eastern Mediterranean region (Greece, Cyprus, Palestine), the hind femur varies in colour from that shown by the type to entirely reddish yellow ; these females also have the base of the stigma much more extensively yellow than in the bred series from Slough but they agree with these specimens in the important antennal characters (see key) and (Text-fig. 19).

Material examined. ENGLAND : Bucks, Slough, 5 ♀, bred viii.1939, ex larva of *Hadena serena*, found same month on *Crepis vireus* (*O. W. Richards*) ; Dorset, Wareham, 1 ♀, 27.vii.1954 (*J. Clark*) ; Kent, Bexley, 1 ♀, vii.1945 (*R. L. E. Ford*). GERMANY : neighbourhood of Berlin, type-locality. CYPRUS : iv, 2 ♀. GREECE : Mt. Penteli, v, 2 ♀. PALESTINE : 1 ♀.

Type in BMNH.

Host : *Hadena serena* Fabr. (Noctuidae). Cocoon brown, without ribs or paler, transverse bands ; one of the cocoons is green.

This species is clearly related to *fordi*, from which it differs in being much more heavily sculptured ; this applies particularly to the propodeum, which is much more coarsely reticulate-rugose in *viduus* than in *fordi* ; the structural details of the flagellum are abundantly different in the two species. In coloration and sculpture, *viduus* approaches much more closely to *ruricola* and here again, the only reliable differences are provided by the antenna.

I have found no satisfactory character for separating the male of *viduus* from that of *ruricola.*

Microplitis ruricola Lyle

Microplitis ruricola Lyle, 1918 : 132.

♀. Hind femur sometimes entirely bright reddish yellow ; sometimes darkened at base and apex but apparently never entirely black. Tegula black as in *viduus.* Stigma at most with a very faint, basal spot.

As in *viduus,* the sternaulus in front, where it bends upwards, tends to lose definition, its rugosities merging with the coarse sculpture of the mesopleurum immediately above the front coxa ; in this respect, compare *strenuus.*

Material examined. ENGLAND : Hants, New Forest, type-series, bred from *Anarta myrtilli* (G. T. Lyle Coll. in BMNH). Cambridge. Herts. Kent. Surrey. GERMANY : Freiburg.

Host : *Anarta myrtilli* L. (Noctuidae), host of type-series. *Amphipyra berbera* Rungs (Noctuidae) ; parasites emerged in June and July. *Calophasia lunula* Hufnagel (Noctuidae) in Germany. Of the type-series in the BMNH only the lectotype male has its cocoon ; this is greyish white with faint greenish tint and is similar to the nine cocoons preserved with the series of five females and four males bred from *A. berbera.*

The only difference between this species and *viduus* that I think can be said really to have specific value, lies in the length and vestiture of the apical antennal segments ; all other characters appear to overlap. It can be said, however, that most specimens of *ruricola,* whether male or female, have predominantly reddish yellow hind femora with uniformly dark stigma, while in *viduus,* at least in N. European specimens, the hind femur is black and the stigma shows a conspicuous yellow, basal blotch.

The position is further complicated by the presence in the BMNH of a female bred from *Hadena ochroleuca* Esper (*Eremobia o.*) which has the flagellum, and colour of hind femur as in *ruricola* but a fairly conspicuous yellow spot at the base of the stigma as in *viduus.* There is also in the BMNH a male, bred from the same host, as the female, in July ; this male has the conspicuous pale spot at base of stigma as in *viduus* but the hind femur is predominantly reddish yellow with darkening only at base above.

There is yet another male in the BMNH, bred from *Anepia irregularis* Hufnagel (Noctuidae), clearly conspecific with the above male but with the hind femur darkened at apex as well as at base and a much more conspicuous yellow blotch at base of stigma. These three specimens have the same kind of cocoon as the bred specimens from *Amphypyra berbera* and *Anarta myrtilli.* I am labelling them as *ruricola* in spite of colour gradations towards *viduus.*

Microplitis fumipennis (Ratzeburg)
(Text-fig. 5)

Microgaster fumipennis Ratzeburg, 1852 : 49.
Microplitis fumipennis (Ratzeburg) Reinhard, 1880 : 358.

♂ ♀. Tegula bright reddish yellow ; dark brownish in 2 ♂, 1 ♀, from Switzerland, Valais. Fore wing strongly embrowned ; more so on proximal half than in the related *sordipes*, though, as in that species, with a darker cloud beneath the stigma ; stigma with or without a yellow spot at base. Hind femur reddish yellow ; hind basitarsus, at least on outer side, as reddish over basal half as the tibia.

♀. Middle lobe of the mesoscutum without a medial keel ; at most with a faintly raised line of rugosities. Preapical segment of the flagellum about twice as long as wide. Scutellum tending to become smooth right at middle and here with a few, ill-defined punctures. Sternaulus very coarsely rugose and losing definition in front, its rugosities merging with those of the mesosternum anterior to it. Hind tarsus somewhat tapered towards apex ; outer spur of the hind tibia very slightly longer than the inner one. Rugosity of the second tergite generally very weak, variable and more or less absent in the male.

Length : ♂ ♀, *c.* 4 mm ; one of the largest species.

Material examined. ENGLAND : Lancs, Burnley, 1 ♀, labelled ' ex geo. larva, v.'. IRELAND : 1 ♀, ex *Acronycta rumicis*, found 28.vii.1935, parasite emerged vi.1936 (Stelfox Coll., now in U.S. Nat. Mus.). POLAND : 4 ♀, 9 ♂, bred from *Chamaepora auricoma*, 1 ♀, ex *Acronycta rumicis*. SCOTLAND : Aberdeen, 1 ♂, 1 ♀, bred v., ex *Acronycta menyanthidis*.

Type in BMNH.

Host : With the exception of the specimen from Burnley, this species seems to be confined to the genus *Acronycta* (now *Apatele*) and has been bred from the following species :—*A. rumicis* L., *A. auricoma* Fabr. (=*Chamaepora auricoma*), *A. menyanthidis* Vieweg.

All the Polish specimens bred from *auricoma* are with their cocoons and bear various dates from October to April. These cocoons, like those of the single Irish example from *rumicis* and the Scottish examples from *menyanthidis* are large, greyish brown, with or without two or three indistinct, longitudinal ribs and unusually broadly flattened along the side of attachment. This is certainly the tough, cryptic cocoon in which the parasite passes the winter.

If the adult emerges in late spring or early summer, it presumably makes use of an alternative host before attacking its acronyctid hosts in the late summer and early autumn ; the single female from Burnley, without cocoon, suggests that this alternative host may be found among the Geometridae.

Microplitis ratzeburgi (Ruthe)
(Text-fig. 2)

Microgaster ratzeburgi Ruthe, 1960 : 143.
Microplitis ratzeburgi (Ruthe) Reinhard, 1880 : 359.
Microplitis cerurae Matsumura, 1921 : 52. **Syn. n.**

♂ ♀. This species has tergite 1 much more widened towards apex than *fumipennis* (Text-fig. 2) and tergite 2 much more rugose.

Material examined. JAPAN : Sapporo, 1 ♀, in BMNH, bred from *Cerura lanigera*. GERMANY : Baden, 1 ♂, bred from *Cerura* sp., on poplar (*Populus*) ; Berlin Dist., 1 ♀, (Ruthe Coll., in BMNH.) These three specimens have the tegula dark brown.

Type in BMNH.

Host : *Cerura lanigera* Butler, *Cerura* sp. (*Notodontidae*). Cocoon uniformly brown, smoother-looking than that of *fumipennis* and without ribbing ; it is more cylindrical in appearance than that of *fumipennis* and more narrowly attached to the substratum.

Microplitis sordipes (Nees)

Microgaster sordipes Nees, 1834 : 167.
Microplitis sordipes (Nees) Reinhard, 1880 : 359.

♀. A species characterized by the absence of sculpture over the middle part of the scutellum ; this becomes smooth, almost polished and with a few scattered punctures.

Flagellum pale beneath. All the femora and tibiae bright reddish yellow ; front tarsus reddish yellow. Fore wing with a cloud beneath the stigma.

Flagellum rather thick. Middle lobe of the mesoscutum with very weak, longitudinal keel. Sides of the scutellar disc with rugosity that merges very gradually into the strong costae of the lateral area.

Tergite 1 about one and one third times longer than its middle width and evenly rugose.

Material examined. ENGLAND : Bucks, Slough, 1 ♀, from cocoon collected 17.ix.1946 ; adult emerged iv.1947 (*O. W. Richards*). GERMANY. POLAND : 2 ♂♂, bred from *Acronycta rumicis* (*Wiackowski*). FINLAND : Kyarvi, 1 ♀, labelled ' 8.ix.1939, ex larva of *Pygaera pigra* (*Mus. Helsinki*) ; Ta. Sääksmäki, 1 ♀, 21.xi. 1936, ex *Acronycta psi* (*Mus. Helsinki*). CZECHOSLOVAKIA : Junovice, 1 ♀, 17.x. 1950, ex *Pygaera anachoreta* (*M. Capek*) ; BOHEMIA : Praha-Ruzyne, 1 ♀, 25.xi, ex *Acronycta psi* L. (*M. Capek*).

Host : *Acronycta psi* L.; *Acronycta rumicis* L. (Acronyctidae). *Pygaera anachoreta* Fabr.; *Pygaera pigra* Hufnagel (Notodontidae). The larvae of all these moths show a certain degree of hairiness ; this may play an important part in host-selection by the parasite.

Cocoon of very characteristic appearance, rather small, barrel-shaped, grey with brown ends and a brown, medial band ; usually fastened to a thin twig. Being brown-banded, the cocoon bears a superficial resemblance to that of *eremita*.

Although I have seen only seven cocoons of *sordipes*, these were all found in the autumn, with adults emerging the following spring. Their tough texture and cryptic coloration suggest an adaptation to winter conditions.

I provisionally include in my concept of *sordipes* a series of specimens bred during the summer months that make a cocoon entirely different from that of typical *sordipes*. These cocoons are evenly fusiform, thin in texture, pale grey with greenish tint or, more rarely, entirely greenish. The insects emerging from them and which I am unable to separate satisfactorily from *sordipes* I am labelling as ' *sordipes*, summer generation '. The material is as follows :—

CZECHOSLOVAKIA : Holic, 1 ♀, 10.v.1967, ex *Scopelosoma satellitia* (*M. Capek*) ; Banska Stiavnica, 1 ♀, 16.vii–1.viii, ex *Acronycta psi* (*M. Capek*) ; Zap. Nemecke, 1 ♀, 1.viii.1963, ex *Acronycta alni* (*M. Capek*). ENGLAND : Surrey, Godalming, 1 ♂, bred 7.viii.1946 from cocoon found 25.vii.1946 ; Gloucester, Shalford, 1 ♂, bred 3.vii. from Noctuid larva on *Glyceria aquatica* (*O. W. Richards*). FINLAND : Jomala, 1 ♂ (*W. Hellén*). JAPAN : Sapporo, 1 ♀, ex *Porthesia similis* (*C. Watanabe*).

Host : *Acronycta alni* L., *Acronycta psi* L., *Scopelosoma satellitia* L. (now *Eupsilia transversa* L.) ; all Noctuidae. *Porthesia similis* Fuessly (Lymantriidae).

In ascribing two different types of cocoon to *sordipes*, I have taken a course of action that helps me out of a taxonomic difficulty but at the same time finds some support in the available information. Nevertheless, I do not exclude the possibility that I have been unable to separate two closely related species.

Microplitis spinolae (Nees)

Microgaster spinolae Nees, 1934 : 166.
Microplitis spinolae (Nees) Reinhard, 1880 : 358.

♀. Basal half of ventral surface of gaster yellow. Hind femur and hind tibia entirely reddish yellow.

Flagellum long, slightly tapered apically, the preapical segment fully twice as long as wide.

Distribution. N. W. EUROPE and eastwards as far as PERSIA and DAGHESTAN on the material available for examination.

Host unknown.

This species is rather easily recognized by the antennal scrobes above being smooth and polished ; the shining, unsculptured zone sometimes reaches as far as the posterior ocelli. Once appreciated, this feature will alone separate *spinolae* from all the other large species of similar coloration.

Microplitis capeki sp. n.

(Text-figs 8, 9)

♀. In general body form and shape of first tergite extremely like *sordipes*. Fore wing to the naked eye faintly but evenly brownish ; the absence of a dark cloud beneath the stigma makes the fore wing of this species markedly different in appearance from that of *sordipes*. Hind femur and hind tibia entirely red. Flagellum only faintly paler beneath.

In a lateral view of the head, the temple is almost angled (Text-fig. 9), a feature absent in *sordipes*. The polished scutellum is more broadly triangular than in *sordipes* and occupies virtually the whole of the disc ; in *sordipes*, the polished area is more narrowed behind and has a broader area of rugosity along the lateral margin. Tergite 1 not, or only very slightly, widened towards apex (Text-fig. 8).

Length : *c.* 3·8 mm, a little smaller than *sordipes*.

Type ♀. CZECHOSLOVAKIA : Veseli, 13.vi.1954, ex *Hypogymna morio* (leg. *Netopil*), (in coll. Capek).

Paratypes. Three females, same data.

Host : *Hypogymna morio* L. (now *Penthophera morio*) (Lymantriidae). A solitary parasite making a bright grass-green cocoon.

With its long thin antenna, this species is much like *strenuus*, but *strenuus* has a dull, sculptured mesoscutum and scutellum and the first tergite is slightly longer and narrower.

Microplitis xanthopus (Ruthe)
(Text-fig. 28)

Microgaster xanthopus Ruthe, 1860 : 147.
Microplitis xanthopus (Ruthe) Reinhard, 1880 : 358.

♀. Easily recognized on the characters given in the key. The flagellum is rather thick, with the preapical segment about one and a half times longer than wide. The scutellum is dull and strongly rugose all over. The 2nd tergite shows a variable amount of rugosity and in some specimens is almost absent.

♂. In 16 males examined, the sculpture of the mesoscutum is very variable with regard to the degree of rugosity shown on the posterior half ; sometimes the posterior area is deeply impressed and filled with very coarse rugosities ; more rarely, the impression is shallow and rugosities correspondingly weak. The more strongly sculptured males are thus very like those of *fumipennis* but can always be separated from that species by having the hind tarsus more or less entirely yellow and the scutellum more or less evenly rugose ; male *xanthopus* can even more reliably be separated from male *fumipennis* by having the parameres of the genitalia broadly truncate at apex ; in *fumipennis* they are more or less evenly tapered to apex.

Material examined. GERMANY : 1 ♀. IRELAND : 9 ♀, 15 ♂. SWEDEN : 2 ♀, 1 ♂. WALES : 1 ♀.

Host unknown.

Microplitis docilis sp. n.

♀. Legs, except coxae, bright reddish yellow ; hind tarsus weakly infuscate. Scape of antenna bright reddish yellow. Wings faintly darkened ; stigma faintly paler at base. Tergite (2+3) reddish, a little more darkened medially.

Head above, and the temples, very coarsely rugose. Antenna rather thick ; preapical segment fully one and two thirds longer than wide ; pubescence of flagellum conspicuous and somewhat bristly.

Mesoscutum very strongly shining, and, for the size of the insect, unusually strongly rugose ; prescutellar furrow half as long as the scutellar shield itself. Reticulation of the propodeum very coarse and very wide-meshed. Sternaulus very coarsely foveate and hardly differentiated from the rugose sculpture of the mesosternum ventral to it. The distal third of the subcostalis and the edge of the stigma show several, widely spaced but clearly differentiated black bristles.

Tergite 1 very slightly narrowed apically, rugose and about one and a half times longer than wide. Tergite 2, as defined by the weak 2nd suture, with a trace of rugosity on each side of median swollen area. Hypopygium very short, the ovipositor completely concealed.

Length : *c.* 3·2 mm.

Type ♀. Ruokolahti, 17.vi.1948 (*W. Hellén*), Helsinki Museum.

This species is largely characterized by its coarse, glistening sculpture which, with regard to mesoscutum and scutellum, is enhanced to some extent by the relatively sparse pubescence.

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22 JUL 1970
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By PAUL E. S. WHALLEY

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SYNOPSIS

This synonymic catalogue includes all generic and subgeneric names of the Phycitinae (Lepidoptera: Pyralidae) of the world. Designation of type-species and their localities are given.

INTRODUCTION

Present views differ on the relative status of the Phycitinae and the Anerastiinae and they are variously regarded as distinct subfamilies or as two tribes of one large family. In this catalogue all the generic names which are at present attributed to the Phycitinae are included, and a subsequent catalogue will deal with the Anerastiinae. In a few cases, genera which should, perhaps, be in the Anerastiinae are included in the present catalogue, and their exact status will have to await a generic revision. The synonymy, with a few exceptions noted in the text, is from published literature. The junior synonyms of genera are given under their appropriate senior one, although referred to in the alphabetic sequence.

The information is arranged in the following sequence, following the generic name ; Author, date, original reference. Type-species (followed by an author, date and reference in some cases, see below), designation. Type-species locality. Author, date, page, (in brackets following the junior synonym.)

The references are abbreviated to follow the ' World List ' except in a few cases (see under Abbreviations).

The type-species are given with their original genus, abbreviated if the species was originally described in the genus concerned, otherwise with the generic name in full.

A reference after the type-species is given when the type-species designation was made after the original description (i.e. type by subsequent designation). A few type-species designations are given for the first time and these are indicated in the text.

The designation of the type-species of the genus is given as original designation, subsequent designation, present designation or by monotypy, as appropriate.

The locality is for the type-specimen only and is not intended as the distribution of the species.

A reference in brackets follows the locality in the case of junior synonyms. This gives the reference to the origin of the subjective synonymy accepted.

NOMENCLATURE CHANGES

Homonyms have been replaced where no junior synonymic name was available for use. The following new names are proposed ; *Abareia, Infinita, Keradere, Plagoa, Zynodes* (details in text).

New synonymy is given under *Oncocera* Stephens, *Addyme* Walker, and *Amyelois* Amsel.

ABBREVIATIONS

Dem. Rep. Congo.	Democratic Republic of the Congo (= former Belgian Congo).
Inaugural Dissertation, Saarbrücken.	A doctoral dissertation of Dr U. Roesler, Saarbrücken, which has been produced in sufficient quantity and suitably reproduced to be considered as published (see also references).
N. Am. Phycit.	North American Phycitidae, see references under Ragonot.
nom. n.	New name, indicates a replacement name for a homonym.
Nouv. Phycit.	Nouveaux Phycitidae, see references under Ragonot.
orig. desig.	Type designation by the original author (original designation).
Rom. Mem.	Memoirs on the Lepidoptera edited by N. M. Romanoff, see references under Ragonot.
subseq. desig.	Type designation by a subsequent author (subsequent designations).

While all the type-species localities have been taken from the original references, the names of the major units have been altered to conform with the present day terminology.

ACKNOWLEDGEMENTS

This catalogue is based on work started by the late R. J. Collins.

To my colleagues in the British Museum (Natural History) I am indebted for their comments and advice.

SYNONYMIC CATALOGUE

ABAREIA **nom. n.** for *Abarys* Turner. *Abarys amaurodes* Turner, by monotypy of *Abarys* Turner. Australia : Queensland.

Abarys Turner, 1947, *Trans. R. Soc. S. Aust.* **71** : 40. *Abarys amaurodes* Turner, by monotypy. Australia : Queensland. Preoccupied by *Abarys* Agassiz, 1846.

Abarys Turner, see *Abareia* nom. n.

ABREPHIA Amsel, 1953, *Beitr. naturk. Forsch. SüdwDtl.* **12** : 15. *Phycis compositella* Treitschke, by monotypy of *Brephia* Heinemann. Europe.

Brephia Heinemann, 1865, *Schmett. Dtl. u. d. Schweiz* **11** : 173. *Phycis compositella* Treitschke, by monotypy. Europe. (Preoccupied by *Brephia* Hübner, 1825.)

ACOLASTODES Meyrick, 1934, *Exot. Microlepidopt.* **4** : 489. *A. oenotripta* Meyrick, by monotypy. Fiji.

ACORNIGERULA Amsel, 1935, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **1** : 207. *A. bilineella* Amsel, by monotypy. Israel.

ACROBASIS Zeller, 1839, *Isis, Leipzig* **1839** : 176. *Phycis tumidella* Zincken, subseq. desig., Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 120. Europe.

Acrocaula Hulst, 1900, *Can. Ent.* **32** : 169. *A. comacornella* Hulst, by monotypy. U.S.A. : Texas. (Heinrich, 1956 : 12.)

Mineola Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 126. *Myelois indigella* Zeller, orig. desig. U.S.A. (Heinrich, 1956 : 12.)

Seneca Hulst, 1890, *ibid.* **17** : 177. *Cateremna tumidulella* Ragonot, orig. desig. U.S.A. : Florida. (Heinrich, 1956 : 12.)

ACROBASOPSIS Amsel, 1958, *Beitr. naturk. Forsch. SüdwDtl.* **17** : 71. *A. talhouki* Amsel, orig. desig. Arabia.

Acromeseres Dyar, see *Ulophora* Ragonot.

ACRONCOSA Barnes & McDunnough, 1917, *Can. Ent.* **49** : 404. *A. albiflavella* Barnes & McDunnough, subseq. desig., Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 174. U.S.A.: California.

ACTINOCRATES Meyrick, 1934, *Exot. Microlepidopt.* **4** : 492. *A. euryniphas* Meyrick, by monotypy. Fiji.

ACTRIX Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 139. *Tacoma nyssaecolella* Dyar, orig. desig. U.S.A.: Washington, D.C.

ADANARSA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 35. *Rhodophaea intransitella* Dyar, orig. desig. U.S.A.: New Mexico.

ADDYME Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 81. *A. occultans* Walker, by monotypy. Malaysia : Sarawak.

Coleothrix Ragonot, 1888, *Nouv. Phycit.* : 12. *C. crassitibiella* Ragonot, by monotypy. Malaysia : Sarawak. **syn. n.**

ADELOSEMIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 230. *Myelois crepusculella* Lederer, orig. desig. Europe.

ADELPERGA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 187. *Heterographis cordubensiella* Ragonot, orig. desig. Argentine : Córdoba.

ADELPHIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 168. *Pempelia petrella* Zeller, orig. desig. U.S.A.

AFRICELLA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 50. *A. micraeola* Hampson, orig. desig. Ghana.

AHWAZIA Amsel, 1949, *Bull. Soc. Fouad I. Ent.* **33** : 285. *A. albocostalis* Amsel, by monotypy. Iran.

Alata Walker, see *Etiella* Zeller.

ALBERADA Heinrich, 1939, *Proc. U. S. natn. Mus.* **86** : 350. *Melitara parabates* Dyar, orig. desig. Mexico.

Albinia Briosi, see *Cryptoblabes* Zeller.

ALISPA Zeller, 1848, *Isis, Leipzig* **1848** : 606. *Tinea angustella* Hübner, by monotypy. Europe.

ALISPOIDES Ragonot, 1888, *Nouv. Phycit.* : 30. *A. vermiculella* Ragonot, by monotypy. South Africa : Natal.

ALLOEA Turner, 1947, *Trans. R. Soc. S. Austr.* **71** : 37. *A. xylochroa* Turner, by monotypy. Australia : Western Australia, Wyndham.

ALOPHIA Ragonot, 1893, *Rom. Mem.* **7** : 433. *Pyralis combustella* Herrich-Schäffer, by monotypy. Europe.

AMALAFRIDA Heinrich, 1939, *Proc. U. S. natn. Mus.* **86** : 385. *Cactoblastis leithella* Dyar, orig. desig. Dutch West Indies : Curaçao.

AMBESA Grote, 1880, *North Am. Ent.* **1** : 98. *A. laetella* Grote, by monotypy. U.S.A.: Colorado.

AMBLUNCUS Amsel, 1954, *Ark. Zool.* (2)**6** : 301. *A. nervosellus* Amsel, orig. desig. Iran.

AMECHEDIA Amsel, 1961, *Ark. Zool.* (2)**13** : 385. *A. pagmanella* Amsel, orig. desig. Iran.

AMETALLOSTICHA Amsel, 1935, *Veröff. dt. Kolon u. Übersee-Mus. Bremen* **1** : 208. *A. aigneri*, by monotypy. Israel.

AMMATUCHA Turner, 1922, *Proc. R. Soc. Vict.* **35** : 43. *A. lathria* Turner, by monotypy. Australia : Queensland.

AMPHIGNOSTIS Meyrick, 1934, *Exot. Microlepidopt.* **4** : 494. *A. nephelocentra* Meyrick, by monotypy. Mozambique.

AMPHITHRIX Ragonot, 1893, *Rom. Mem.* **7** : 185. *Nephopteryx sublineatella* Staudinger, by monotypy. Spain : Andalusia.

Amphycitopsis ; Dyar, see *Piesmopoda* Zeller.

AMYELOIS Amsel, 1954, *Bol. ent. Venezol.* **10** : 42. *Myelois venipars* Dyar, orig. desig. Mexico, **gen. rev.**

Paramyelois Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 46. *Myelois solitella* Zeller, orig. desig. Colombia, **syn. n.**

ANABASIS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 25. *Myelois ochrodesma* Zeller, orig. desig. Colombia.

ANADELOSEMIA Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 51. *Nephopteryx senesciella* Schaus, orig. desig. Costa Rica.

Anagasta Heinrich, subgenus, see *Ephestia* Guenée.

ANARESCA Turner, 1947, *Trans. R. Soc. S. Austr.* **71** : 37. *A. xuthochroa* Turner, by monotypy. Australia : North Queensland, Lindeman Is.

ANCOVA Ragonot, 1893, *Rom. Mem.* **7** : 149. *Nephopyterx meridionalis* Walker, by monotypy. India.

ANCYLODES Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 250. *A. pallens* Ragonot, orig. desig. Spain.

ANCYLODINIA de Joannis, 1913, *Boll. Soc. ent. Ital.* **44** : 142. *A. rectilineela* de Joannis, by monotypy. Ethiopia : Adi Caie.

ANCYLOSIS Zeller, 1839, *Isis, Leipzig* **1839** : 178. *Phycis dilutella* Treitschke (= *cinnamonella* Duponchel). Subseq. desig., Ragonot, 1901, *Rom. Mem.* **8** : 212. Europe.

ANCYLOSTOMIA Ragonot, 1893, *Rom. Mem.* **7** : 567. *Myelois stercorea* Zeller, by monotypy. Brazil.

ANDERIDA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 211. *Euzophera sonorella* Ragonot, orig. desig. Mexico.

ANEGCEPHALESIS Dyar, 1917, *Insecutor Inscit. menstr.* **5** : 46. *A. cathaeretes* Dyar, by monotypy. Bahamas.

ANEPHOPTERYX Amsel, 1955, *Beitr. naturk. Forsch. SüdwDtl.* **14** : 121. *A. designella* Amsel, orig. desig. Iraq.

Anhomoeosoma Roesler, subgenus, see *Homoeosoma* Curtis.

ANONAEPESTIS Ragonot, 1894, *Indian Mus. Notes* **3** : 106. *A. bengallella* Ragonot, by monotypy. India : Calcutta.

ANORISTIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 236. *A. umbrifasciella* Ragonot, orig. desig. U.S.S.R.: Namangan.

Anousterunia Hampson, see *Pogonotrophus* Sauber.

ANTHOPTERYX Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 335. *A. irichampa* Dyar, orig. desig. Panama.

ANYPSIPYLA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 327. *A. univitella* Dyar, orig. desig. Panama.

APHYCITA Amsel, 1968, *Stuttg. Beitr. Naturk.* **191** : 9. *A. sindella* Amsel, orig. desig. Pakistan : Karachi.

Aphycitopsis Dyar, see *Piesmopoda* Zeller.

APHYLETES Ragonot, 1893, *Rom. Mem.* **7** : 444. *Salebria nigrisparsella* Ragonot, orig. desig. U.S.S.R.: Derbent.

APOMYELOIS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 42. *Dioryctria bistriatella* Hulst, orig. desig. U.S.A.: Washington, D.C.

APROCERATIA Amsel, 1950, *Ark. Zool.* (2)**1** : 224. *Proceratia rhectogramma* Meyrick, orig. desig. Iraq.

APROPHTHASIA Amsel, 1968, *Stuttg. Beitr. Naturk.* **191** : 5. *A. vartianae* Amsel, orig. desig. Pakistan : Karachi.

APTUNGA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 211. *Vitula macropasa* Dyar, orig. desig. Guatemala.

Araxes Stephens, see *Hypochalcia* Hübner.

ARCHIEPHESTIA Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31** : 39. *A. murciella* Amsel, orig. desig. Spain : Murcia, Espuna.

ARCHIGALLERIA Rebel, 1901, *in* Staudinger, *Cat. Lepid. Pal.* **2** : 2. *Aphomia proavitella* Rebel, orig. desig. Canary Islands.

Argyrodes Guenée, see *Eucarphia* Hübner.

Agyrorhabda Hampson, see *Eucarphia* Hübner.

Aria Ragonot, see *Auxacia* Ragonot.

ARIMANIA Amsel, 1954, *Ark. Zool.* (2)**6** : 289. *Salebria komaroffi* Ragonot, orig. desig. U.S.S.R.: Caucasus.

ARSISSA Ragonot, 1893, *Rom. Mem.* **7** : 131. *Pyralis ramosella* Herrich-Schäffer, by monotypy. Europe.

Arucha Walker, see *Etiella* Zeller.

ASALEBRIA Amsel, 1953, *Revue fr. Ent.* **20** : 226. *Salebria venustella* Ragonot, by monotypy. U.S.S.R.: Krasnoarmiejsk. (Sarepta.)

ASARTA Zeller, 1848, *Isis, Leipzig* **1848** : 686. *Phycis aethiopella* Duponchel, by subseq. desig., Ragonot, 1901, *Rom. Mem.* **8** : 1. France.

Chionea Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 311. Preoccupied by *Chionea* Dalman, 1816.

ASARTODES Ragonot, 1893, *Rom. Mem.* **7** : 617. *Ennichia monospessulalis* Duponchel, orig. desig. France : Montpellier.

ASEMIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 69. *A. aprepia* Hampson, orig. desig. Ceylon.

Aspithra Ragonot, see *Ernophthora* Meyrick.

ASSARA Walker, 1893, *List Spec. Lepid. Ins. B. M.* **27** : 79. *A. albicostalis* Walker, by monotypy. Malaysia : Sarawak.

Cateremna Meyrick, 1882, *Proc. Linn. Soc. N. S. W.* **7** : 156. *C. microdoxa* Meyrick, subseq. desig., Hampson, 1912, *J. Bombay nat. Hist. Soc.* **21** : 1252. Australia : Tasmania. (Roesler, 1965 : 37.)

ATHELOCA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 81. *Nephopteryx subrufella* Hulst, orig. desig. U.S.A.: Florida.

AUCHMERA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 64. *Heterographis falsalis* Hampson, orig. desig. India : Madras.

AUDEOUDIA de Joannis, 1927, *Bull. Soc. lépidopt. Genève* **5** : 214. *A. grisella* de Joannis, orig. desig. Mozambique.

Aurana Walker, see *Eurhodope* Hübner.

AUTOCYROTA Meyrick, 1933, *Exot. Microlepidopt.* **4** : 388. *A. diacma* Meyrick, by monotypy. Dem. Rep. Congo [former Belgian Congo].

AUXACIA Ragonot, 1888, *Nouv. Phycit.* : **25**. *A. bilineella* Ragonot, by monotypy of *Aria* Ragonot. U.S.S.R.: Turkestan.

Aria Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 235. *A. bilineella* Ragonot, by monotypy. U.S.S.R. Preoccupied by *Aria* Robineau-Desvoidy, 1830.

AZAERA Schaus, 1913, *Ann. Mag. nat. Hist.* (8)**11** : 250. *A. muciella* Schaus, orig. desig. Costa Rica.

Calamophleps Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 342. *C. squalidella* Dyar, orig. desig. Panama. (Heinrich, 1956 : 282).

BALANOMIS Meyrick, 1887, *Trans. ent. Soc. Lond.* **1887** : 264. *B. encyclia* Meyrick, by monotypy. Australia: New South Wales.

Ballovia Dyar, see *Fundella* Zeller.

BAPHALA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 235. *Euzophera homoeosella* Zeller, orig. desig. Colombia.

BARBIFRONTIA Hampson, 1901, *Rom. Mem.* **8** : 525. *B. hemileucella* Hampson, by monotypy. Australia : Coomoo.

BAZARIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 234. *B. pempeliella* Ragonot, orig. desig. U.S.S.R.: Krasnowodsk.

BELUTCHISTANIA Amsel, 1951, *Ark. Zool.* (2)**1** : 539. *B. squamalis* Amsel, by monotypy. Iran.

BEMA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 336. *B. myja* Dyar, orig. desig. Panama.

Relmis Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 336. *R. ydda* Dyar, orig. desig. Panama. (Heinrich, 1956 : 217.)

BERTELIA Barnes & McDunnough, 1913, *Contr. Lepid. N. Am.* (3)**2** : 140. *B. grisella* Barnes & McDunnough, orig. desig. U.S.A.: Arizona.

BETHULIA Ragonot, 1888, *Nouv. Phycit.* : 37. *B. championella* Ragonot, by monotypy. Guatemala.

BIGNATHOSIA Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31** : 42. *Euzopherodes adpiscinella* Chrétien, orig. desig. Tunisia.

BIRINUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 36. *B. russeolus* Heinrich, orig. desig. British Guiana.

Blabioides Hampson, see *Zynodes* nom. n.

BOROSIA Gozmany, 1959, *Annls hist.-nat. Mus. natn. hung.* (N.S.) **51** : 363. *B. aegyptiaca* Gozmany, orig. desig. Egypt.

BRACHIOLODES Amsel, 1953, *Bull. Inst. fr. Afr. noire* **15** : 1443. *B. ziczac* Amsel, orig. desig. Mauretania.

BRADYRRHOA Zeller, 1848, *Isis, Leipzig* **1848** : 681. *Phycis gilveolella* Treitschke, subseq. desig., Ragonot, 1893, *Rom. Mem.* **7** : 550. Hungary.

Brephia Heinemann, see *Abrephia* Amsel.

Bussa Ragonot, see *Thylacoptila* Meyrick.

Cabima Dyar, see *Diatomocera* Ragonot.

CABNIA Dyar, 1904, *Jl N. Y. ent. Soc.* **12** : 108. *C. myronella* Dyar, by monotypy. U.S.A.

CABOTIA Ragonot, 1888, *Nouv. Phycit.* : 30. *C. semidiscella* Ragonot, by monotypy. Brazil.

Encystia Hampson, 1901, *Ann. mag. nat. Hist.* (7)**7** : 256. *E. bonhoti* Hampson, by monotypy. Bahamas. (Heinrich, 1956 : 200.)

CABRAGUS Moore, 1886, *Lepid. Ceylon* **3** : 370. *C. auritipalpus* Moore, by monotypy. Ceylon.

CACOZOPHERA Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 58. *C. venosa* Dyar, by monotypy. Guatemala.

CACTOBLASTIS Ragonot, 1901, *Rom. Mem.* **8** : 15. *Zophodia cactorum* Berg, by monotypy. Uruguay.

Neopyralis Brèthes, 1920, [15.iv.] *An. Soc. rur. argent.* (54)**50** : 284, and [15.vii.] *in* Ronna, *Chacaras e Quinaes*, **20** : 18. *N. ronnai* Brèthes, orig. desig. Brazil. [described in both publications in 1920.] (Heinrich, 1956 : 245.)

CACTOBROSIS Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 407. *Moodna elongatella* Hampson, orig. desig. Mexico.

Cadra Walker, subgenus, see *Ephestia* Guenée.

CAHELA Heinrich, 1939, *Proc. U. S. natn. Mus.* **86** : 361. *Olyca ponderosella* Barnes & McDunnough, orig. desig. U.S.A.

CAINA Ragonot, 1893. *Rom. Mem.* **7** : 463. *C. deletella* Ragonot, orig. desig. India : Poona.

Calamophleps Dyar, see *Azaera* Schaus.

CALGUIA Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 83. *C. defiguralis* Walker, by monotypy. Malaysia : Sarawak.

Campyloplesis Dyar, see *Moodnopsis* Dyar.

CANARSIA Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 179. *Nephopteryx ulmiarrosorella* Clemens, orig. desig. U.S.A.: Massachusetts.

Canarsiana Strand, 1920, *Arch. Naturgesch.* **85**, A12 : 123. *C. discocellularis* Strand, orig. desig. U.S.A.: Massachusetts. (McDunnough, 1924 : 249.)

Canarsiana Strand, see *Canarsia* Hulst.

CANDIOPE Ragonot, 1888, *Nouv. Phycit.* : 14. *C. joannisella* Ragonot, subseq. desig., Ragonot, 1893, *Rom. Mem.* **7** : XLVIII. India.

CANTHELEA Walker, 1866, *List Spec. Lepid. Ins. B. M.* **35** : 1726. *Homoeosoma gratella* Walker, by monotypy. Ceylon.

CARISTANIUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 97. *Oligochroa pellucidella* Ragonot, orig. desig. Puerto Rico.

CARTHADE Snellen, 1899, *Tijdschr. Ent.* **42** : 91. *C. caecalis* Snellen, by monotypy. Colombia.

CASSIANA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 212. *Vitula malacella* Dyar, orig. desig. Mexico.

CATACROBASIS Gozmany, 1958, *Annls hist. nat. Mus. natn. hung.* (N.S.) **9** : 224. *Tinea obtusella* Hübner, orig. desig. Europe.

CATASTIA Hübner, 1825, *Verz. bekannt. Schmett.* : 372. *Noctua marginea* [Denis & Schiffermüller], subseq. desig., Ragonot, 1893, *Rom. Mem.* **7** : 479. Europe.

Diosia Duponchel, 1832, *Hist. Nat. Lep. Fr.* 8(5)**2** : 12. *Pyralis marginalis* [Denis & Schiffermüller], orig. desig. Europe.
(*marginalis* is an unjustified replacement name for *marginea*.)

Cateremna Meyrick, see *Assara* Walker.

CATHYALIA Ragonot, 1888, *Nouv. Phycit.* : 7. *C. fulvella* Ragonot, by monotypy. Indonesia : Sulawesi [Celebes].

CATOPYLA Bradley, 1968, *Bull. ent. Res.* **57** : 609. *C. dysorphnaea* Bradley, orig. desig. Nigeria.

CAUDELLIA Dyar, 1904, *Proc. ent. Soc. Wash.* **6** : 116. *C. apyrella* Dyar, subseq. desig., Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 292. U.S.A.: Plummers Is., Ma.

CAUSTELLA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 55. *Heterographis micralis* Hampson, orig. desig. Ceylon.

CAVIPALPIA Ragonot, 1893, *Rom. Mem.* **7** : 154. *C. translucidella* Ragonot, by monotypy. India.

CAYENNIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 62. *C. rufitinctalis* Hampson, orig. desig. French Guiana.

Centolopha, misspelling, see *Ceutholopha* Zeller.

CENTROMETOPIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 236. *C. interruptella* Ragonot, subseq. desig., Ragonot, 1893, *Rom. Mem.* **7** : 491. U.S.S.R.: Askhabad.

CERACANTHIA Ragonot, 1893, *Rom. Mem.* **7** : 230. *C. vepreculella* Ragonot, by monotypy. Ecuador.
Procandiope Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 50. *P. mamella* Dyar, by monotypy. Panama. (Heinrich, 1956 : 85.)

CERATAGRA Meyrick, 1932, *Exot. Microlepidopt.* **4** : 235. *C. mitrophora* Meyrick, by monotypy. Fiji.

Ceratamna Butler, see *Etiella* Zeller.

Ceratium Thienmann, see *Phycita* Curtis.

CEROPREPES Zeller, 1867, *Stettin. ent. Ztg* **28** : 401. *C. patriciella* Zeller, by monotypy. India : Darjeeling.

CEUTHOLOPHA Zeller, 1867, *Stettin. ent. Ztg* **28** : 375. *C. isidis* Zeller, by monotypy. United Arab Republic (Egypt).
Hypophana Meyrick, 1863, *Proc. Linn. Soc. N. S. W.* **7** : 169. *H. petalocosma* Meyrick, subseq. desig., Ragonot, 1893, *Rom. Mem.* **7** : 254. Australia. (Ragonot, 1893 : 253.)

CHARARICA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 38. *Myelois annuliferella* Dyar, orig. desig. Mexico.

CHERCHERA Dumont, 1932, *Soc. ent. Fr. Livre centen.* : 711. *C. abatesella* Dumont, by monotypy. North Africa.

CHILOCREMASTIS Meyrick, 1934, *Exot. Microlepidopt.* **4** : 492. *C. castanias* Meyrick, by monotypy. Dem. Rep. Congo [Belgian Congo].

Chionea Guenée, see *Asarta* Zeller.

CHORRERA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 330. *C. idiotes* Dyar, orig. desig. Panama.

CHRISTOPHIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 233. *C. callipterella* Ragonot, orig. desig. U.S.S.R.: Askhabad.

CHRYSOSCINIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 54. *C. plicata* Hampson, orig. desig. New Guinea.

CILIOCERODES Amsel, 1961, *Ark. Zool.* (2)**13** : 366. *C. belutschistanella* Amsel, orig. desig. Iran.

CILIOPEMPELIA Amsel, 1961, *Ark. Zool.* (2)**13** : 355. *C. hyrcanella* Amsel, orig. desig. Iran.

CITRIPESTIS Ragonot, 1893, *Rom. Mem.* **7** : 151. *Nephopteryx sagittiferella* Moore, by monotypy. Malaysia : Perak.

CNEPHIDIA Ragonot, 1892, *Bull. Soc. ent. Fr.* **1892** : 235. *C. kenteriella* Ragonot, by monotypy. U.S.S.R.: Siberia.

COLEOCORNUTIA Amsel, 1961, *Ark. Zool.* (2)**13** : 372. *C. shirazella* Amsel, orig. desig. Iran.

Coleothrix Ragonot, see *Addyme* Walker.

COMOTIA Dyar, 1915, *Proc. U. S. natn. Mus.* **207** : 343. *C. torsicornis* Dyar, orig. desig. Panama.

COMPSOTELES Meyrick, 1935, *Exot. Microlepidopt.* **4** : 581. *C. heliochyta* Meyrick, by monotypy. Spain : Estepar.

CONOBATHRA Meyrick, 1886, *Trans. ent. Soc. Lond.* **1886** : 271. *C. automorpha* Meyrick, by monotypy. New Guinea.

COPAMYNTIS Meyrick, 1934, *Exot. Microlepidopt.* **4** : 495. *Elegia alectryonura* Meyrick, by monotypy. Indonesia : Java.

COPTARTHRIA Ragonot, 1893, *Rom. Mem.* **7** : 251. *Myelois daspyga* Zeller, by monotypy. Colombia.

CORNIGERULA Amsel, 1935, *Veröff. dt. kolon. u. Übersee-Mus. Bremen* **1** : 206. *C. eremicola* Amsel, by monotypy. Israel.

CREMNOPHILA Ragonot, 1892, *Bull. Soc. ent. Fr.* **1892** : ccxxxvi. *C. auranticiliella* Ragonot, by monotypy. U.S.S.R.: Siberia.

CREOBOTA Turner, 1931, *Proc. Linn. Soc. N. S. W.* **56** : 342. *C. coccophthora* Turner, by monotypy. Australia : Canberra.

CROCIDOMERA Zeller, 1848, *Isis, Leipzig* **1848** : 865. *C. turbidella* Zeller, by monotypy. Dominican Rep.: Santo Domingo.

CROCYDOPHORA Meyrick, 1882, *Proc. Linn. Soc. N. S. W.* **1882** : 158. *Nephopteryx stenopterella* Meyrick, by monotypy. Australia : New South Wales.

CRYPTADIA Turner, 1913, *Proc. R. Soc. Qd* **24** : 121. *Cryptoblabes xuthobela* Turner, by monotypy. Australia.

CRYPTOBLABES Zeller, 1848, *Isis, Leipzig* **1848** : 644. *C. bistriga* Haworth, subseq. desig., Ragonot, 1893, *Rom. Mem.* **7** : XLIV. Great Britain.

Albinia Briosi, 1877, *Atti Staz. chim. Agrar. sper. Palermo* **1** : 61. *A. wockiani* Briosi, by monotypy. Sicily. (Preoccupied by *Albinia* Robineau-Desvoidy, 1830.)

CRYSTALLOZYGA Meyrick, 1937, *Exot. Microlepidopt.* **5** : 130. *C. alicia* Meyrick, by monotypy. Dem. Rep. Congo [Belgian Congo].

CTENOMEDES Meyrick, 1935, *Exot. Microlepidopt.* **4** : 582. *C. neuractis* Meyrick, by monotypy. India : Dehra Dun.

CTENOMERISTIS Meyrick, 1929, *Trans. ent. Soc. Lond.* **77** : 159. *C. ochrodepta* Meyrick, by monotypy. Marquesas Is.

Cuba Dyar, see *Sarasota* Hulst.

CULCITA Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 17. *C. djiroftella* Amsel, orig. desig. Iran.

CUNIBERTA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 34. *Nephopteryx subtinctella* Ragonot, orig. desig. U.S.A.: California.

Cymbalorissa Gozmany, subgenus, see *Euzophera* Zeller.

Cyphomima Meyrick, see *Singhalia* Hampson.

CYPRUSIA Amsel, 1958, *Z. wien. ent. Ges.* **43** : 54. *C. wiltshirei* Amsel, orig. desig. Cyprus.

CYIZA Walker, 1864, *List Spec. Lepid. Ins. B. M.* **30** : 965. *C. punctalis* Walker, by monotypy. Malaysia : Sarawak.

Dakruma Grote, see *Zopohdia* Hübner.

Dannemora Hulst, see *Diviana* Ragonot.

DARIA Ragonot, 1888, *Nouv. Phycit.* : 13. *D. coenosella* Ragonot, by monotypy. U.S.S.R.: Marghilan.

DASYPYGA Ragonot, 1887, *N. Amer. Phycit.* : 5. *D. alternosquamella* Ragonot, by monotypy. U.S.A.: California.

DAVARA Walker, 1859, *List Spec. Lepid. Ins. B. M.* **19** : 1020. *D. azonaxsalis* Walker, by monotypy. Brazil.

Eucardinia Dyar, 1918, *Insecutor Inscit. menstr.* **6** : 138. *Ulophora caricae* Dyar, by monotypy. Cuba. (Heinrich, 1956 : 73.)

Homalopalpia Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 332. *H. dalera* Dyar, by monotypy. Panama. (Heinrich, 1956 : 73.)

DECTOCERA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 243. *D. pseudolimbella* Ragonot, by monotypy. Italy.

DELATTINIA Roesler, 1965, *Inaugural Dissertation, Saarbrücken* : 27. *Ephestia vapidella* Mann, orig. desig. Turkey : Amasia.

DELOGENES Meyrick, 1918, *Trans. N. Z. Inst.* **50** : 132. *D. limnoxa* Meyrick, by monotypy. New Zealand.

DENTICERA Amsel, 1961, *Ark. Zool.* (2)**13** : 366. *D. sardzeella* Amsel, orig. desig. Iran.

DENTINODIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 251. *D. craticulella* Ragonot, by monotypy. U.S.S.R.: Marghilan.

Dentinosa Caradja, 1937, *Dt. ent. Z. Iris* **51** : 152. Mis-spelling, *Dentinodia* Ragonot.

DENTITEGUMIA Amsel, 1961, *Ark. Zool.* (2)**13** : 374. *Pristophora nigrigranella* Ragonot, orig. desig. Iran.

DIALEPTA Turner, 1913, *Proc. R. Soc. Qd* **24** : 119. *D. micropolia* Turner, by monotypy. Australia.

DIATOMOCERA Ragonot, 1893, *Rom. Mem.* **7** : 250. *Homeosoma tenebricosa* Zeller, by monotypy. Colombia.

Cabima Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 329. *C. dosia* Dyar, orig. desig. Panama. (Heinrich, 1956 : 50.)

DIDIA Ragonot, 1893, *Rom. Mem.* **7** : 60. *D. subramosella* Ragonot, by monotypy. Mozambique: Delagoa Bay.

DIFUNDELLA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 327. *D. corynophora* Dyar, orig. desig. Panama.

DIORYCTRIA Zeller, 1846, *Isis, Leipzig* **1846** : 732. *Tinea abietella* [Denis & Schiffermüller], subseq. desig., Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 134. Europe.

Pinipestis Grote, 1878, *Can. Ent.* **10** : 19. *Nephopteryx zimmermani* Grote, by monotypy. U.S.A.: New York. (Heinrich, 1956 : 149.)

Diosia Duponchel, see *Catastia* Hübner.

DIPSOCHARES Meyrick, 1937, *Exot. Microlepidopt.* **5** : 71. *D. nephelopa* Meyrick, by monotypy. Dem. Rep. Congo [= Belgian Congo].

Discopalpia Ragonot, see *Piesmopoda* Zeller.

DITRACHYPTERA Ragonot, 1893, *Rom. Mem.* **7** : 227. *Candiope verruciferella* Ragonot, by monotypy. S. Africa: Natal.

DIVIANA Ragonot, 1888, *Nouv. Phycit.* : 27. *D. eudoreella* Ragonot, by monotypy. Central America.

Dannemora Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 212. *D. edentella* Hulst, orig. desig. U.S.A.: Florida. (Heinrich, 1956 : 206.)

Palatka Smith, 1891, *Lep. Boreal Am.* : 84. *Nomen nudum.* (See also Hulst, 1892, *Canad. Ent.* **24** : 62.)

DIVITIACA Barnes & McDunnough, 1913, *Contr. Lepid. N. Am.* **2** : 183. *D. ochrella* Barnes & McDunnough, orig. desig. U.S.A.: Florida.

Divona Ragonot, see *Megasis* Guenée.

Dolichorrhinia Ragonot, see *Macrorrhinia* Ragonot.

DRESCOMA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 328. *D. cyrdipsa* Dyar, orig. desig. Panama.

DRESCOMOPSIS Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 61. *D. subelisa* Dyar, by monotypy. Guatemala.

DYSPHYLIA Ragonot, 1888, *Nouv. Phycit.* : 5. *D. viridella* Ragonot, by monotypy. Madagascar.

ECBATANIA Amsel, 1961, *Ark. Zool.* (2)**13** : 358. *E. alvandella* Amsel, orig. desig. Iran.

ECBLETODES Turner, 1904, *Proc. R. Soc. Qd* **18** : 124. *E. psephenias* Turner, by monotypy. Australia : Brisbane.

Encryphodes Turner, 1913, *Proc. R. Soc. Qd* **24** : 123. *E. aenictopa* Turner, by monotypy. Australia. (Turner, 1947 : 41.)

ECCOPIDIA Hampson, 1899, *J. Bombay nat. Hist. Soc.* **12** : 311. *E. strigata* Hampson, orig. desig. Ceylon.

ECCOPISA Zeller, 1848, *Isis, Leipzig* **1848** : 648. *E. effractella* Zeller, by monotypy. Italy.

Eccopsia Dyar, see *Vitula* Ragonot.

ECTOHOMOEOSOMA Roesler, 1965, *Inaugural Dissertation, Saarbrücken* : 66. *E. kasyellum* Roesler, orig. desig. Hungary.

ECTOMYELOIS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 43. *Myelois decolor* Zeller, orig. desig. Colombia.

Spectrobates sensu Roesler, 1965, *nec* Meyrick, 1935.

Ectyposa de Joannis, see *Psorosa* Zeller.

EDULICA Hampson, 1901, *Rom. Mem.* **8** : 122. *Euzophera compedella* Zeller, orig. desig. Colombia.

ELASMOPALPUS Blanchard, 1852, Gay, *Hist. Chile* **7** : 104. *E. angustella* Blanchard, by monotypy. Chile.

ELEGIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 229. *E. atrifasciella* Ragonot, by monotypy. U.S.S.R.: Lagodechi.

ELEUSINA Hampson, 1901, *Rom. Mem.* **8** : 210. *Ephestia guttela* Snellen, orig. desig. Indonesia : Java.

Emmerita Hampson, see *Meroptera* Grote.

EMPORIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 239. *E. grisescens* Ragonot, by monotypy. Tunisia : Gabes.

Encryphodes Turner, see *Ecbletodes* Turner.

Encystia Hampson, see *Cabotia* Ragonot.

ENDOLASIA Hampson, 1896, *Fauna Br. India* Moths **4** : 74. *E. melanoleuca* Hampson, orig. desig. India : Sind.

Endommasis Hampson, see *Oncolabis* Zeller.

ENTMEMACORNIS Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 58. *E. proselytes* Dyar, by monotypy. Guatemala.

EPHEDROPHILA Dumont, 1928, *Encyc. ent.* B. 3, Lépid. **3** : 28. *Ulotricha lucasi* Mabille, orig. desig. Tunisia.

Ephesia, mis-spelling, see *Ephestia* Guenée.

EPHESTIA Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 319. *Tinea elutella* Hübner, subseq. desig., Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 197. Europe.

CADRA Walker, 1864, *List Spec. Lepid. Ins. B. M.* **30** : 961. *C. defectella* Walker, by monotypy. Ceylon. [Subgenus.]

ANAGASTA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 299. *Ephestia kuehniella.* Zeller, orig. desig. Europe. [Subgenus.]

Hyphantidium Scott, 1859, *Proc. zool. Soc. Lond.* **1859** : 207. *H. sericarium* Scott, by monotypy. Australia.

Xenephestia Gozmany, 1958, *Annls hist.-nat. Mus. natn. hung.* (NS) **9** : 223. *Pempelia cautella* Walker, orig. desig. India. (Whalley, 1960 : 183.)

EPHESTIODES Ragonot, 1887, *N. Amer. Phycit.* : 16. *E. gilvescentella* Ragonot, orig. desig. U.S.A.: California.

EPHESTIOPSIS Ragonot, 1893, *Rom. Mem.* **7** : 24. *Myelois oenobarella* Meyrick, by monotypy. Australia, Sydney.

EPICHALCIA Roesler, 1969, *Ent. Z. Frankf. a. M.* **79** : 14. *E. amasiella* Roesler, orig. desig Turkey.

EPICROCIS Zeller, 1848, *Isis, Leipzig* **1848** : 878. *E. festivella* Zeller, by monotypy. Indonesia : Java.

Gabra Walker, 1866, *List Spec. Lepid. Ins. B. M.* **35** : 1727. *G. tinealella* Walker, by monotypy. Indonesia : Java. (Ragonot, 1893 : 438.)

EPIEPISCHNIA Amsel, 1954, *Ark. Zool.* (2)**6** : 308. *E. pseudolydella* Amsel, orig. desig. Iran.

EPILYDIA Amsel, 1954, *Ark. Zool.* (2)**6** : 282. *Myelois liturosella* Erschoff, orig. desig. Turkey.

EPIPARTHIA Amsel, 1935, *Veröff. dt. kolon. u. Übersee-Mus. Bremen* **1** : 216. *E. vasta* Amsel, by monotypy. Jordan : Jericho.

EPISCHIDIA Hampson, 1901, *Rom. Mem.* **8** : 113. *Phycisfulv ostrigella* Eversmann, orig. desig. U.S.S.R.: Urals.

Epischnia auct. *nec* Hübner, see *Pima* Hulst.

EPISCHNIA Hübner, 1825, *Verz. bekannt. Schmett.* : 370. *E. prodromella* Hübner, subseq. desig., Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 19. Europe.

EPISCHNOPSIS Amsel, 1954, *Ark. Zool.* (2)**6** : 302. *Epischnia oculatella* Ragonot, orig. desig. Iran.

EPISCYTHRASTIS Meyrick, 1937, *Exot. Microlepidopt.* **5** : 74. *E. elaphitis* Meyrick, by monotypy. Dem. Rep. Congo [= Belgian Congo].

EREBOENIS Meyrick, 1935, *Exot. Microlepidopt.* **4** : 552. *E. saturata* Meyrick, by monotypy. India (South).

ERELIEVA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 309. *Pempelia quantulella* Hulst, orig. desig. U.S.A.: Texas.

EREMBERGA Heinrich, 1939, *Proc. U. S. natn. Mus.* **86** : 375. *Cactobrosis leuconips* Dyar, orig. desig. U.S.A.: Arizona.

EREMOGRAPHA Meyrick, 1932, *Exot. Microlepidopt.* **4** : 238. *Cercoprepes sebasmia* Meyrick, orig. desig. South Australia.

ERNOPHTHORA Meyrick, 1887, *Trans. ent. Soc. Lond.* **1887** : 263. *E. phoenicias* Meyrick, by monotypy. Australia : Queensland.

Mimistis Hampson, 1896, *Fauna Br. India*, Moths **4** : 65. *M. actiosoides* Hampson, orig. desig. Ceylon. (Ragonot, 1901 : 307.)

Aspithra Ragonot, 1888. *Nouv. Phycit.* : 37. *A. maculicostella* Ragonot, by monotypy. Marquesas Is. (Meyrick, 1931 : 116.)

ETHIOPSELLA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 59. *E. nasuta* Hampson, orig. desig. Nigeria.

ETIELLA Zeller, 1846, *Isis, Leipzig* **1846** : 733. *Phycis zinckenella* Treitschke, by monotypy. Sicily.

Alata Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 108. *A. anticella* Walker, by monotypy. Sierra Leone. (Preoccupied by *Alata* Linck, 1783.)

Arucha Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 201. *A. indicalis* Walker, by monotypy. South Africa. (Ragonot, 1893 : 572.)

Ceratamma Butler, 1880, *Proc. zool. Soc. Lond.* **1880** : 689. *C. hobsoni* Butler, orig. desig. Formosa. (Shibuya, 1923 : 93.)

Mella Walker, 1859, *List Spec. Lepid. Ins. B. M.* **19** : 1017. *M. dymnusalis* Walker, by monotypy. Sierra Leone. (Ragonot, 1893 : 572.)

Modiana Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 82. *M. scitivittalis* Walker, by monotypy. Australia. (Ragonot, 1893 : 572.)

Rhamphodes Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 319. *Phycis etiella* Treitschke, by monotypy. Europe. (Ragonot, 1893: 572.)

ETIELLOIDES Shibuya, 1928, *Insecta matsum.* **2** : 21. *E. curvella* Matsumura, orig. desig. Japan.

EUAGETA Turner, 1947, *Trans. R. Soc. S. Austr.* **71** : 47. *E. arestodes* Turner, by monotypy. Australia : Queensland.

EUCAMPYLA Meyrick, 1882, *Proc. Linn. Soc. N. S. W.* **7** : 159. *E. etheiella* Meyrick, by monotypy. Australia : Sydney.

Eucardina Dyar, see *Davara* Walker.

EUCARPHIA Hübner, 1825, *Verz. bekannt. Schmett.* : 364. *Tinea vinetella* Fabricius, subseq. desig. Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 18. Germany.

Argyrorhabda Hampson, 1926, *Ann. Mag. nat. Hist.* (9)**18** : 634. *Tinea vinetella* Fabricius, orig. desig. Europe (Unnecessary replacement name for *Argyrodes* Guenée).

Argyrodes Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 322. *Tinea vinetella* Fabricius, by monotypy. Europe.

EULOGIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 275. *Ephestia ochrifrontella* Zeller, orig. desig. U.S.A.: Texas.

EULOPHOTA Hampson, 1926, *Ann. Mag. nat. Hist.* (9)**18** : 633. *Pristarthria caustella* Hampson, orig. desig. South Africa.

EUMYSIA Dyar, 1925, *Insecutor. Inscit. menstr.* **13** : 220. *Yosemetia* [sic] *mysiella* Dyar, orig. desig. U.S.A.: Utah.

EURHODOPE Hübner, 1825, *Verz. bekannt. Schmett.* : 371. *E. pudoralis* [Denis & Schiffermüller] (= *rosella* Scopoli), subseq. desig., Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 19 (as *rosella* Scopoli). Europe.

Semnia Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 322. *Ilithyia cruentella* Duponchel, by monotypy. Spain. (Ragonot, 1893 : 67.)

RHODOPHAEA Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 312. *Phycis advenella* Zincken, subseq. desig., Ragonot, 1893, *Rom. Mem.* **7** : xliv. Europe. [Subgenus.]

Aurana Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 122. *A. actiosella* Walker, by monotypy. Ceylon. (Ragonot, 1893 : 68.)

Gaana Walker, 1866, *List Spec. Lepid. Ins. B. M.* **35** : 1729. *G. basiferella* Walker, by monotypy. S. Africa. (Ragonot, 1893 : 72.)

RHODOPHAEOPSIS Amsel, 1950, *Ark. Zool.* (2)**1** : 238. *R. iranalis* Amsel, orig. desig. Iran. [Subgenus.]

EURHOPHAEA Amsel, 1961, *Ark. Zool.* (2)**13** : 387. *E. hyrcanella* Amsel, orig. desig. (as *E. flavella hyrcanella* Amsel). Iran.

EURYTHMASIS Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 338. *E. ignefatua* Dyar, orig. desig. Panama.

EURYTHMIA Ragonot, 1887, *N. Amer. Phycit.* : 16. *Ephestia hospitella* Zeller, orig. desig. U.S.A. : Texas.

EURYTHMIDIA Hampson, 1901, *Rom. Mem.* **8** : 208. *E. ignidorsella* Ragonot, by monotypy. U.S.A.: Arizona.

EUZOPHERA Zeller, 1867, *Trans. ent. Soc. Lond.* (3)**5** : 456. *Phycis pinguis* Haworth, subseq. desig., Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 174. Great Britain. (*Euzophera* was proposed by Zeller as a replacement for *Stenoptycha* Heinemann.)

Melia Heinemann, 1863, *Schmett. Dtld u. Schweiz* (11)**1** : 209. *Phycis terebrella* Zincken, here designated. Europe. (Replacement name for *Stenoptycha.*) Preoccupied by *Melia* Billberg, 1820.

Pistogenes Meyrick, 1937, *Exot. Microlepidopt.* **5** : 73. *P. mercatrix* Meyrick, by monotypy. Iraq. (Amsel, 1940 : 42.)

Stenoptycha Heinemann, 1863, *Schmett. Dtld u. Schweiz* (11)**1** : 190. *Phycis terebrella* Zincken, here designated. Europe. (Preoccupied by *Stenoptycha* Zeller, 1863.)

CYMBALORISSA Gozmany, 1958, *Annls hist.-nat. Mus. natn. hung.* (NS)**9** : 223. *Stenoptycha fuliginosella* Heinemann, orig. desig. Austria : Vienna. [Subgenus.]

EUZOPHERODES Hampson, 1901, *Rom. Mem.* **8** : 79. *E. albicans* Ragonot, orig. desig. India : Calcutta.

Phloeophaga Chrètien, 1911, *Annls Soc. ent. Fr.* (1910)**79** : 510. *Euzophera pusilla* Mabille, subseq. desig., Amsel, 1940, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 40. Algeria : Biskra. (Amsel, 1940 : 40.)

Trigonopyralis Amsel, 1935, *Mitt. zool. Mus. Berl.* **20** : 280. *T. keltella* Amsel, by monotypy. Jordan. (Amsel, 1940 : 40.)

EXODESIS Hampson, 1919, *Ann. Mag. nat. Hist.* (9)**4** : 313. *E. vaterfieldi* Hampson, orig. desig. Sudan (described in the Schoenobiinae, transfer to Phycitinae probably not previously published).

EXUPERIUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 274. *E. negator* Heinrich, orig. desig. Peru : Patamayo Distr., La Chorerra.

FARNOBIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 276. *Euzophera quadripuncta* Zeller, orig. desig. Colombia.

FARSIA Amsel, 1961, *Ark. zool.* (2)**13** : 375. *F. pallorella* Amsel, orig. desig. Iran.

FAVERIA Walker, 1859, *List Spec. Lepid. Ins. B. M.* **19** : 888. *F. laiasalis* Walker by monotypy. Australia : Sydney.

FULRADA Heinrich, 1956, *Proc. U. S. natn. Mus.* **207** : 71. *Dasypyga querna* Dyar, orig. desig. Panama.

FUNDELLA Zeller, 1848, *Isis, Leipzig* **1848** : 866. *F. pellucens* Zeller by monotypy. West Indies : St. Thomas.

Ballovia Dyar, 1913, *Proc. U. S. natn. Mus.* **44** : 323. *B. cistipennis* Dyar, orig. desig. Barbados. (Heinrich, 1956 : 59.)

Gaana Walker, see *Eurhodope* Hübner.

GABINIUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 84. *Promylea paulsoni* Ragonot, orig. desig. Chile : Quillota.

Gabra Walker, see *Epicrocis* Zeller.

GENNADIUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 277. *G. junctor*, Heinrich, orig. desig. French Guiana.

GENOPHANTIS Meyrick, 1888, *Trans. ent. Soc. Lond.* **1888** : 241. *G. iodora* Meyrick, by monotypy. Hawaiian Is.

GETULIA Ragonot, 1888, *Nouv. Phycit.* : 26. *G. institella* Ragonot, by monotypy. Gambia.

GLYPTOCERA Ragonot, 1889, *Entomologica am.* **5** : 114. *Nephopteryx consobrinella* Zeller, orig. desig. U.S.A.: Texas.

GLYPTOTELES Zeller, 1848, *Isis, Leipzig* **32** : 646. *G. leucarinella* Zeller, by monotypy. Germany.

GNATHOMORPHA Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 18. *G. makranella* Amsel, orig. desig. Iran.

GORAMA Walker, 1866, *List Spec. Lepid. Ins. B. M.* **35** : 1749. *G. strenuella* Walker, by monotypy. Indonesia : Sula.

GOZMANYIA Roesler, 1965, *Inaugural Dissertation, Saarbrücken* : 36. *Ephestia crassa* Amsel, orig. desig. Jordan : Jericho.

GREGORMPISTA Roesler, 1969, *Ent. Z., Frankf. a. M.* **79** : 23. *Nephopteryx validella* Christoph, orig. desig. U.S.S.R.: Krasnowodsk.

Guastica Walker, see *Piesmopoda* Zeller.

GYMNANCYLA Zeller, 1848, *Isis, Leipzig* **1848** : 744. *Tinea canella* [Denis & Schiffermüller], by monotypy. Europe.

GYMNANCYLODES Amsel, 1968, *Stuttg. Beitr. Naturk.* **191** : 8. *G. psorosella* Amsel, orig. desig. Pakistan : Karachi.

Gyra Gistl, see *Phycita* Curtis.

GYROPTERA Bradley, 1968, *Bull. ent. Res.* **57** : 611. *G. robertsi* Bradley, orig. desig. Nigeria.

HAFISIA Amsel, 1950, *Ark. Zool.* (2)**1** : 242. *H. lundbladi* Amsel, by monotypy, Iran.

HANNEMANNEIA Roesler, 1967, *Ent. Z., Frankf. a. M.* **77** : 278. *Hyphantidium tacapella* Ragonot, orig. desig. Algeria.

HARNOCHA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 337. *H. velessa* Dyar, orig. desig. Panama.

HARRARIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 66. *H. rufipicta* Hampson, orig. desig. Ethiopia.

HEDEMANNIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 244. *H. lineatella* Ragonot, by monotypy. U.S.S.R.: Askhabad.

HEMIPTILOCERA Ragonot, 1888, *Nouv. Phycit.* : 9. *H. chinographella*, by monotypy. Peru : Chanchamayo.

HEOSPHORA Meyrick, 1882, *Proc. Linn. Soc. N. S. W.* **7** : 158. *H. psamathella* Meyrick, subseq. desig., Ragonot, 1901, *Rom. Mem.* **8** : 381. Australia : Sydney.

HERAS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 34. *H. disjunctus* Heinrich, orig. desig. Colombia.

HETEROCHROSIS Hampson, 1926, *Ann. Mag. nat. Hist* (9)**18** : 631. *Heterographis molybdophora* Lower, orig. desig. Australia.

HETEROGRAPHIS Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 31. *Ephestia samaritanella* Zeller, subseq. desig., Bisset, 1938 *in* Pierce and Metcalfe, *The Genitalia of the British Pyrales with the Deltoids and Plumes* : 59. Europe. [Also referred to in 1885 by Ragonot in *Bull. Soc. ent. Fr.* **1885** : 149.]

Mona Hulst, 1888, *Entomologica am.* **4** : 115. *M. olbiella* Hulst, orig. desig. U.S.A.: Colorado. Preoccupied by *Mona* Reichenbach, 1863.

Trissonca auct., *nec* Meyrick, 1882.

HOENEIA Caradja, 1938, *Stettin. ent. Ztg* **99** : 248. *H. sinensis* Caradja, by monotypy. China : Yunnan.

Homalopalpia Dyar, see *Davara* Walker.

HOMODIGMA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 69. *H. geera* Hampson, orig. desig. Ceylon.

HOMEOGRAPHA Ragonot, 1888, *Nouv. Phycit.* : 24. *H. lanceolella* Ragonot, by monotypy. Peru : Callao.

HOMEOGRAPTA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 67. *Staudingeria spectrifasciella* Ragonot, orig. desig. U.S.S.R.: Turkestan.

HOMOEOSOMA Curtis, 1833, *Entomological Mag.* **1** : 190. *H. gemina* Haworth, by monotypy. (= *H. sinuella* Fabricius). Great Britain.

Lotria Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 320. *Tinea sinuella* Fabricius, subseq. desig., Desmarest, 1857 *in* Chenu, *Encyc. d'hist. Nat.* : 225. Europe.

Phycidea Zeller, 1839, *Isis, Leipzig,* **1839** : 178. *Tinea sinuella* Fabricius, subseq. desig. Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 219. Europe.

Phycitodes Hampson, 1917, *Novit. zool.* **24** : 26. *P. albistriata* Hampson, orig. desig. East Africa. (Heinrich, 1956 : 219.)

ANHOMOEOSOMA Roesler, 1965, *Inaugural Dissertation* : 64. *Phycis nimbella* Duponchel, orig. desig. France. [Subgenus.]

HONORA Grote, 1878, *Bull. U. S. geol. geogr. Survey Territ.* **1878** : 702. *H. mellinella* Grote, by monotypy. U.S.A.: Texas.

HONORINUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 199. *H. fuliginosus* Heinrich, orig. desig. Peru : Angasmarca.

HORISTARCHA Meyrick, 1935, *Exot. Microlepidopt.* **4** : 581. *H. ogmosema* Meyrick, by monotypy. Spain.

Hornigia Ragonot, see *Manhatta* Hulst.

Hulstea, mis-spelling, see *Hulstia* Hampson.

HULSTIA Hampson, 1901, *Rom. Mem.* **8** : 127. *Nephopteryx undulatella* Clemens, orig. desig. U.S.A.: Pennsylvania.

HYALOSPILA Ragonot, 1888, *Nouv. Phycit.* : 11. *H. stictoneurella* Ragonot, orig. desig. Central America. [? Guatemala.]

HYDASPIA Ragonot, 1888, *Nouv. Phycit.* : 22. *H. dorsipunctella* Ragonot, by monotypy. India : Kashmir.

HYLOPERCNAS Meyrick, 1934, *Exot. Microlepidopt.* **4** : 493. *H. eribolax* Meyrick, by monotypy. Fiji.

HYLOPHORA Meyrick, 1934, *Exot. Microlepidopt.* **4** : 391. *H. craterantis* Meyrick, by monotypy. Dem. Rep. Congo [= Belgian Congo].

HYPARGYRIA Ragonot, 1888, *Nouv. Phycit.* : 9. *H. metalliferella* Ragonot, by monotypy. Ghana.

Hypermescinia Dyar, see *Nonia* Hampson.

Hyphantidium Scott, see *Ephestia* Guenée.

HYPOCHALCIA Hübner, 1825, *Verz. bekannt. Schmett.* : 467. *Tinea ahenella* [Denis & Schiffermüller], subseq. desig., Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 18. Europe.

Araxes Stephens, 1834, *Brit. Ent. Haust.* **4** : 315. *Tinea ahenella* [Denis & Schiffermüller], subseq. desig., Westwood, 1840, *Syn. Gen. Brit. Ins.* : 113. Europe.

(Bleszynski's designation for *Araxes*, 1963, *Acta zool. cracov.* **8** : 106 is incorrect.)

HYPODARIA Hartig, 1939, *Z. öst. EntVer.* **24** : 10. *Paradaria myeloisiformis* Hartig, by monotypy of *Paradaria* Hartig. Afghanistan.

Paradaria Hartig, 1937, *Z. öst. EntVer.* **22** : 70. *Paradaria myeloisiformis* Hartig. Preoccupied by *Paradaria* Kuznetzov, 1908.

Hypographia Ragonot, see *Hypogryphia* Ragonot.

HYPOGRYPHIA Ragonot, 1890, *Bull. Soc. ent. Fr.* **1890** : 119. *H. uncinatella* Ragonot, by monotypy of *Hypographia* Ragonot. Algeria.

Hypographia Ragonot, 1890, *Bull. Soc. ent. Fr.* **1890** : 110. *H. uncinatella* Ragonot, by monotypy. Preoccupied by *Hypographia* Guenée, 1858.

Hypophana Meyrick, see *Ceutholopha* Zeller.

HYPORATASA Ragonot, 1901, *Rom. Mem.* **8** : 5. *Pyralis allotriella* Herrich-Schäffer, by monotypy. Europe.

HYPSIPYLA Ragonot, 1888, *Nouv. Phycit.* : 10. *H. pagodella* Ragonot, by monotypy. India.

ICHORARCHIS Meyrick, 1937, *Exot. Microlepidopt.* **5** : 132. *I. iozona* Meyrick, by monotypy. Iraq.

IDIOBROTIS Meyrick, 1937, *Exot. Microlepidopt.* **5** : 132. *I. oxygrapha* Meyrick, by monotypy. India : Madras.

Ilithyia Berthould, 1827, *in* Latreille, *Nat. Fam. Thier.* : 485. Transferred to Galleriinae, Whalley, 1964 *Acta. zool. cracov.* **9** : 574.

ILLATILA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 334. *I. gurbyris* Dyar, orig. desig. Panama.

Ilythia, mis-spelling of *Ilithyia* Berthould.

IMMYRLA Dyar, 1906, *Jl N. Y. ent. Soc.* **14** : 107. *I. nigrovittella* Dyar, by monotypy. U.S.A.: Pittsburgh.

***INFINITA* nom. n.** for *Lydia* Ragonot. *Myelois lutisignella* Mann, by orig. desig. of *Lydia* Ragonot. Yugoslavia.

Lydia Ragonot, 1901, *Rom. Mem.* **8** : 200. *Myelois lutisignella* Mann, orig. desig. Yugoslavia. Preoccupied by *Lydia* Gistl, 1848.

INGRIDIOLA Roesler, 1969, *Bonn. zool. Beitr.* **20** : 263. *Heterographis conchyliella* Ragonot, orig. desig. China : Kouldja.

INSALEBRIA Filipjev, 1924, *Ezheg. gosud. Muz. N. M. Martiyanova* **2**(3) : 17. *I. kozhantschikovi* Filipjev, by monotypy. U.S.S.R.: Siberia, Minusinsk.

INTERJECTIO Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 106. *Ambesa columbiella* McDunnough, orig. desig. Canada.

IRAKIA Amsel, 1955, *Beitr. naturk. Forsch. SüdwDtl.* **14** : 122. *I. pallens* Amsel, orig. desig. Iraq.

IRANSHARIA Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 15. *I. nigripunctella* Amsel, orig. desig. Iran.

ISAURIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 228. *I. kuldgensis* Ragonot, by monotypy. China : Kouldja.

Melitene Ragonot, 1888, *Nouv. Phycit.* : 13. *Isauria kuldgensis* Ragonot, by monotypy of *Isauria* Ragonot. Unnecessary replacement name.

JACUTSCIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 58. *J. strigata* Hampson, orig. desig. U.S.S.R.: Siberia.

JAKUARTE Viette, 1953, *Bull. mens. Soc. Linn. Lyon* **22** : 206. *J. martinalis* Viette, orig. desig. Madagascar.

***KERADERE* nom. n.** for *Praesalebria* Amsel, 1954 (21 March). *Pempelia noctivaga* Staudinger, orig. desig. of *Praesalebria* Amsel, 1954 (21 March). Turkey : Keradere.

Praesalebria Amsel, 1954 (21 March), *Ark. Zool.* (2)**6** : 295. *Pempelia noctivaga* Staudinger, orig. desig. Turkey. Preoccupied by *Praesalebria* Amsel, 1954 (15 March.)

KHORASSANIA Amsel, 1951, *Ark. Zool.* (2)**1** : 534. *K. hartigi* Amsel, by monotypy. Iran.

KHUZISTANIA Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 12. *K. richteri* Amsel, orig. desig. Iran.

KLIMESCHIOLA Roesler, 1965, *Inaugural Dissertation, Saarbrücken* : 112. *Ephestia philetella* Rebel, orig. desig. Crete.

Kyra Gozmany, see *Myelois* Hübner.

LACIPEA Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 138. *L. muscosella* Walker, by monotypy. Ceylon.

LAETILIA Ragonot, 1889, *Entomologica am.* **1889** : 116. *Dakruma coccidivora* Comstock, subseq. desig., Ragonot, 1890, *Bull. Soc. ent. Fr.* **1890** : viii. U.S.A.

Laosticha Dyar, 1902, *Bull. U. S. natn. Mus.* **52** : 431. *Dakruma ephestiella* Ragonot, by monotypy. U.S.A.: Arizona. (Heinrich, 1956 : 230.)

LAMBESIA Rebel, 1903, *Dt. ent. Z. Iris* **16** : 1. *L. caradjae* Rebel, by monotypy. Algeria.

Laodamia Ragonot, see *Oncocera* Stephens.

Laosticha Dyar, see *Laetilia* Ragonot.

LARISTANIA Amsel, 1951, *Ark. Zool.* (2)**1** : 536. *L. sardzella* Amsel, by monotypy. Iran.

LASCELINA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 264. *L. canens* Heinrich, orig. desig. U.S.A.: Texas.

Lasiocera Meyrick, see *Lasiosticha* Meyrick.

LASIOSTICHA Meyrick, 1887, *Trans. ent. Soc. Lond.* **1887** : 261. *L. canilinea* Meyrick, by monotypy of *Lasiocera* Meyrick. Australia.

Lasiocera Meyrick, 1878, *Proc. Linn. Soc. N. S. W.* **3** : 209. *L. canilinea* Meyrick, by monotypy. Australia. Preoccupied by *Lasiocera* Dejean, 1831.

LETOA Walker, 1866, *List Spec. Lepid. Ins. B. M.* **35** : 1737. *L. patulella* Walker, by monotypy. N. India.

LIPOGRAPHIS Ragonot, 1887, *N. Amer. Phycit.* : 10. *Pempelia fenestratella* Packard, orig. desig. U.S.A.: California.

Lispe Treitschke, see *Myelois* Hübner.

LONGIGNATHIA Roesler, 1965, *Inaugural Dissertation, Saarbrücken* : 26. *L. cornutella* Roesler, orig. desig. China : Hunan.

LOPHOTHORACIA Hampson, 1901, *Rom. Mem.* **8** : 537. *L. omphalella* Hampson, by monotypy. Australia : Queensland.

Lotria Guenée, see *Homoeosoma* Curtis.

Luconia Ragonot, see *Thiallela* Walker.

Lydia Ragonot, see *Infinita* nom. n.

LYMPHA Ragonot, 1901, *Rom. Mem.* **8** : 10. *Phycis chalybella* Eversmann, by monotypy. U.S.S.R.: Urals.

Mabillia Ragonot, see *Plagoa* nom. n.

Macrochilota Turner, see *Parramatta* Hampson.

MACRORRHINIA Ragonot, 1887, *N. Amer. Phycit.* : 13. *M. aureofasciella* Ragonot, by monotypy. U.S.A.: Arizona.

Dolichorrhinia Ragonot, 1888, *Nouv. Phycit.* : 28. *Macrorrhinia aureofasciella* Ragonot, by monotypy of *Macrorrhinia* Ragonot. Unnecessary replacement name.

MADIAMA Walker, 1864, *List Spec. Lepid. Ins. B. M.* **30** : 963. *M. nigroscitalis* Walker, by monotypy. Sierra Leone.

MAGIRIA Zeller, 1867, *Stettin. ent. Ztg* **28** : 392. *M. imparella* Zeller, by monotypy. East Indies.

MAGIRIOPSIS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 94. *Sematoneura denticostella* Dyar, orig. desig. Mexico.

MAHELA Ragonot, 1888, *Nouv. Phycit.* : 6. *M. saalmulleri* Ragonot, by monotypy. Madagascar.

Makela, mis-spelling, see *Mahela* Ragonot.

MAKRANIA Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 12. *M. belutschistanella* Amsel, orig. desig. Iran.

MANHATTA Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 196. *Ephestia biviella* Zeller, by orig. desig. of *Hornigia* Ragonot. Austria.

Hornigia Ragonot, 1887, *N. Amer. Phycit.* : 16. *Ephestia biviella* Zeller, orig. desig. Austria. Preoccupied by *Hornigia* Ragonot, 1885.

MARICOPA Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 205. *Ciris lativittella* Ragonot, orig. desig. U.S.A.: Arizona.

Valdivia Ragonot, 1888, *Nouv. Phycit.* : 27. *V. coquimbella* Ragonot, by monotypy. Chile. Preoccupied by *Valdivia* White, 1847. (No replacement name proposed as a junior synonym is available.)

MASCELIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 57. *Euzophera ectophaea* Hampson, by monotypy. Ceylon.

MASTHALA Walker, 1864, *List Spec. Lepid. Ins. B. M.* **30** : 962. *M. favillalella* Walker, by monotypy. ? Australia.

Maxillaria Staudinger, see *Paramaxillaria* Inoue.

MECHEDIA Amsel, 1951, *Ark. Zool.* (2)**1** : 531. *M. pristophorella* Amsel, by monotypy. Iran.

MEGALOPHYCITA Amsel, 1953, *Bull. Inst. fr. Afr. noire* **15** : 1442. *M. albicostella* Amsel, orig. desig. Mauretania.

Megaphysis Grote, see *Melitara* Walker.

MEGARTHRIA Ragonot, 1893, *Rom. Mem.* **7** : 156. *Myelois peterseni* Zeller, by monotypy. Colombia.

MEGASIS Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 309. *M. dilucidella* Duponchel, subseq. desig., Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 97. France.

Divona Ragonot, 1893, *Rom. Mem.* **7** : 535. *Myelois ilignella* Zeller (= *dilucidella* Duponchel), orig. desig. Europe.

MELANISTIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 72. *M. bicolor* Hampson, orig. desig. Nigeria.

MELATHRIX Ragonot, 1893, *Rom. Mem.* **7** : 435. *Pempelia praetextella* Christoph, by monotypy. U.S.S.R.: Krasnowodsk.

Melia Heinemann, see *Euzophera* Zeller.

MELITARA Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 136. *M. prodenialis* Walker, by monotypy. U.S.A.

Megaphycis Grote, 1882, *Can. Ent.* **14** : 30. *M. bolli* Zeller, by monotypy. U.S.A. (Ragonot, 1901 : 12.)

Melitene Ragonot, see *Isauria* Ragonot.

Mella Walker, see *Etiella* Zeller.

MEROPTERA Grote, 1882, *Can. Ent.* **14** : 30. *Pempelia pravella* Grote, orig. desig. U.S.A.: Maine.

Emmerita Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 76. *Meroptera mirandella* Hampson, orig. desig. U.S.A.: Colorado. (Heinrich, 1956 : 121.)

MERULEMPISTA Roesler, 1967, *Ent. Z. Frankf. a. M.* **77** : 274. *Pempelia cingilella* Zeller, orig. desig. Hungary.

MESCINIA Hampson, 1901, *Rom. Mem.* **8** : 83. *Ephestia commatella* Zeller, orig. desig. Colombia.

MESCINIADIA Hampson, 1901, *Rom. Mem.* **8** : 121. *Nephopteryx infractalis* Walker, by monotypy. Malaysia : Sarawak.

Meseiniadia Turner, 1913, *Proc. R. Soc. Qd* **24** : 123. Mis-spelling, *Mesciniadia* Hampson.

MESCINIELLA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 55. *Euzophera micans* Hampson, orig. desig. Ceylon.

MESCINIODES Hampson, 1901, *Rom. Mem.* **8** : 27. *M. subinfractalis* Hampson, by monotypy. Malaysia : Sarawak.

Meseiniadia Turner, see *Mesciniadia*.

METALLOSTICHA Hampson, 1901, *Rom. Mem.* **8** : 68. *Myelois argyrogrammos* Zeller, orig. desig. Turkey : Bithynie.

METALLOSTICHODES Roesler, 1967, *Ent. Z. Frankf. a. M.* **77** : 276. *Myelois nigrocyanella* Constant, orig. desig. France.

METEPHESTIA Hampson, 1901, *Rom. Mem.* **8** : 87. *Ephestia simplicula* Zeller, by monotypy. Colombia.

METOECIS Mabille, 1879, *Annls Soc. ent. Fr.* **1879** : 340. *M. lepidocerella* Mabille, by monotypy. Madagascar.

Zophodiopsis Fromholz, 1883, *Berl. ent. Z.* **27** : 12. *Z. hyaenella* Fromholz, by monotypy. Tanzania (Zanzibar). (Ragonot, 1893 : 134.)

METRIOSTOLA Ragonot, 1893, *Rom. Mem.* **7** : 478. *Epischnia vacciniella* Zeller, by monotypy. Finland.

MEYRICKIALIS Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 79. *Hypophana homosema* Meyrick, by monotypy of *Meyrickiella* Hampson. Australia : Perth.

Meyrickiella Hampson, 1901, *Rom. Mem.* **8** : 86. *Hypophana homosema* Meyrick, by monotypy. Australia. Preoccupied by *Meyrickiella* Berg, 1898.

MICROMESCINIA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 347. *M. pygmaea* Dyar, orig. desig. Panama.

MICROPHESTIA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 346. *M. animalcula* Dyar, orig. desig. Panama.

MICROPHYCITA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 346. *M. titillella* Dyar, orig. desig. Panama.

MICROTHRIX Ragonot, 1888, *Nouv. Phycit.* : 25. *M. fuscidorsella* Ragonot, by monotypy. S. Africa : Natal.

MILDRIXIA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 405. *M. constitutionella* Dyar, orig. desig. Mexico.

Mimistis Hampson, see *Ernophthora* Meyrick.

MIMOPOLYOCHA Matsumura, 1925, *J. Coll. Agric. Hokkaido Imp. Univ.* (3)**15** : 184. *M. obscurella* Matsumura, by monotypy. Japan : Saghalien.

Mineola Hulst, see *Acrobasis* Zeller.

Modiana Walker, see *Etiella* Zeller.

MOERBES Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 337. *Zophodia dryopella* Schaus, orig. desig. Costa Rica.

Mona Hulst, see *Heterographis* Ragonot.

MONOPTILOTA Hulst, 1900, *Can. Ent.* **32** : 13. *M. nubillella* Hulst, by monotypy. U.S.A.: Maryland.

MONOTONIA Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31** : 44. *Adelosemia straminella* Zerny, orig. desig. Turkey : Taurus Mts.

MOODNA Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 193. *M. pelviculella* Hulst, orig. desig. U.S.A.: New York.

MOODNELLA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 289. *M. paula* Heinrich, orig. desig. Guatemala.

MOODNOPSIS Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 408. *M. decipiens* Dyar, by monotypy. Mexico.

Campyloplesis Dyar, 1919, *Insecutor. Inscit. menstr.* **7** : 61. *C. inveterella* Dyar, by monotypy. Guatemala. (Heinrich, 1956 : 269.)

MUSSIDIA Ragonot, 1888, *Nouv. Phycit.* : 10. *M. nigrivenella* Ragonot, by monotypy. Mozambique.

MYELODES Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 77. *M. jansei* Hampson, orig. desig. Rhodesia.

[1]***MYELOIS*** Hübner, 1825, *Verz. bekannt. Schmett.* : 371. *Tinea cribrella* Hübner, subseq. desig., Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 19 (cited as *medullalis* Hübner). Europe.

Lispe Treitschke, 1832, *Schmett. Eur.* **9**(1) : 204. *Tinea cribrella* Hübner, by monotypy. Europe. Preoccupied by *Lispe* Latreille, 1796.

Myelophila Treitschke, 1835, *Schmett. Eur.* **10**(3) : 174. *Tinea cribrella* Hübner, by monotypy. Europe.

Kyra Gozmany, 1958, *Annls hist.-nat. Mus. natn. hung.* (N.S.)**9** : 224. *Phycis cirigerella* Zincken, orig. desig. Europe. (Hannemann, 1964 : 196.)

Spectrobates auct., *nec* Meyrick.

MYELOISIPHANA Hartig, 1937, *Z. öst. EntVer.* **22** : 71. *M. afghana* Hartig, by monotypy. Afghanistan.

Myelophila Treitschke, see *Myelois* Hübner.

MYELOPSIS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 40. *Myelois coniella* Ragonot, orig. desig. U.S.A.: Nevada.

MYRLAEA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 234. *Pempelia albistrigata* Staudinger, orig. desig. Turkey : Anatolia, Amasia.

NANAIA Heinrich, 1939, *Proc. U. S. natn. Mus.* **86** : 353. *N. substituta* Heinrich, orig. desig. Peru : Cuzco.

NEASARTA Hampson, 1908, *J. Bombay nat. Hist. Soc.* **18** : 263. *N. nyctichroalis* Hampson, orig. desig. Ceylon.

NEFERTITIA Gozmany, 1960, *Annls hist.-nat. Mus. natn. hung.* (N.S.) **52** : 413. *N. candida* Gozmany, orig. desig. U.A.R.: Egypt.

NEOCORISTIS Meyrick, 1937, *Exot. Microlepidopt.* **5** : 133. *N. entomophaga* Meyrick. Indonesia : Java.

NEONONIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 52. *N. taprobalis* Hampson, orig. desig. Ceylon.

NEOPEMPELIA Amsel, 1954, *Ark. Zool.* (2)**6** : 272. *Pempelia hieroglyphella* Ragonot, orig. desig. Iran : Astrabad.

Neopyralis Brèthes, see *Cactoblastis* Ragonot.

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[1] See footnote, p. 55.

NEPHOPTERIX Hübner, 1825, *Verz. bekannt. Schmett.* : 370. *Phycis rhenella* Zincken, subseq. desig., Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 19. Germany.

Nephopteryx, unjustified emendation, Zeller, 1839, *Isis, Leipzig*, **1839** : 176.

Sciota Hulst, 1888, *Entomologica am.* **4** : 115. *S. croceella* Hulst, orig. desig. U.S.A.: Texas. (Heinrich, 1956 : 123.)

PARANEPHOPTERIX Roesler, 1969, *Bonn. zool. Beitr.* **20** : 259. *Salebria barteli* Caradja, orig. desig. U.S.S.R.: Uralsk. [Subgenus.]

NEPHOPTERYGIA Amsel, 1965, *Annln naturh. Mus. Wien* **68** : 596. *N. austeritella* Amsel, orig. desig. Sudan : Wadi Halfa.

Nephopteryx, mis-spelling, see *Nephopterix* Hübner.

NEUROTOMIA Chrétien, 1911, *Annls Soc. ent. Fr.* **79** : 515. *N. algeriella* Chrétien, by monotypy. Algeria.

NICETIODES Schaus, 1923, *Zoologica, Stuttg.* **5** : 48. *N. apianella* Schaus, orig. desig. Galapagos Islands.

NIETHAMMERIODES Roesler, 1969, *Bonn. zool. Beitr.* **20** : 274. *Ancylosis diremptella* Ragonot, orig. desig. Spain.

NONIA Hampson, 1901, *Rom. Mem.* **8** : 260. *Homoeosoma exiguella* Ragonot, by monotypy. Colombia.

Hypermescinia Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 341. *H. lambella* Dyar, orig. desig. Panama. (Heinrich, 1956 : 215.)

NUMONIA Ragonot, 1893, *Rom. Mem.* **7** : 4. *N. cymindella* Ragonot, by monotypy. U.S.S.R.: Vladivostok.

NYCTEGRETIS Zeller, 1848, *Isis, Leipzig* **1848** : 650. *Tinea achatinella* Hübner, by monotypy. Europe.

NYCTIGENES Meyrick, 1937, *Exot. Microlepidopt.* **5** : 132. *N. euphrontis* Meyrick, by monotypy. Dem. Rep. Congo [= Belgian Congo].

NYLONALA Gozmany, 1960, *Annls hist.-nat. Mus. natn. hung.* (NS)**52** : 415. *N. infidelis* Gozmany, orig. desig. U.A.R.: Egypt.

OCALA Hulst, 1892, *Can. Ent.* **24** : 61. *O. dryadella* Hulst, by monotypy. U.S.A.: Florida.

OCRISIA Ragonot, 1893, *Rom. Mem.* **7** : 525. *Myelois robiniella* Millière, by monotypy. France : Celles les Bains.

OCRISIODES Amsel, 1950, *Ark. Zool.* (2)**1** : 225. *O. chirazalis* Amsel, by monotypy. Iran.

ODONTARTHRIA Ragonot, 1893, *Rom. Mem.* **7** : 147. *O. ochrivenella* Ragonot, by monotypy. Portugal : Thomar.

OEDILEPIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 67. *Nephopteryx striginervella* Hampson, orig. desig. Ceylon.

OEDOTHMIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 60. *O. endopyrella* Hampson, orig. desig. Mexico.

Synothmia Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 61. *S. bahamasella* Hampson, orig. desig. Bahamas. (Heinrich, 1956 : 205.)

OGILVIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 60. *Hypogryphia pulverealis* Hampson, orig. desig. Sokotra.

OLIGOCHROA Ragonot, 1888, *Nouv. Phycit.* : 20. *Pempelia dionysia* Zeller, orig. desig. Sicily : Syracuse.

OLIGOCHROIDES Strand, 1909, *Arch. Naturgesch.* **75**, 1 : 385. *O. nigritella* Strand, orig. desig. [Zambia], Old Livingstone.

OLYBRIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 113. *Myelois aliculella* Hulst, orig desig. U.S.A.: Arizona.

OLYCA Walker, 1857, *List Spec. Lepid. Ins. B. M.* **11** : 725. *O. phryganoides* Walker, by monotypy. Dominican Republic.

OLYCELLA Dyar, 1928, *Proc. ent. Soc. Wash.* **30** : 134. *Melitara junctolineella* Hulst, orig. desig. U.S.A.: Texas.

[2]***ONCOCERA*** Stephens, 1829, *Nomen. Brit. Ins.* **11** : 217. *Phalaena carnella* Linnaeus, subseq. desig., Westwood, 1840, *Syn. Gen. Brit. Ins.*, : 113. Europe.

Laodamia Ragonot, 1888, *Nouv. Phycit.* : 22. *Pempelia faecella* Zeller, orig. desig. Europe, **syn. n.**

SALEBRIA Zeller, 1846, *Isis*, **1846** : 779. *Tinea palumbella* [Denis & Schiffermüller], subseq. desig., Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 19. Europe. [Subgenus].

ONCOLABIS Zeller, 1848, *Isis, Leipzig* **1848** : 877. *O. anticella* Zeller, by monotypy. Brazil.

Endommasis Hampson, 1901, *Rom. Mem.* **8** : 124. *E. nigritella* Hampson, by monotypy. Brazil. (Heinrich, 1956 : 199.)

OREANA Hulst, 1888, *Entomologica am.* **4** : 115. *Dioryctria unicolorella* Hulst, orig. desig. U.S.A.: Washington.

ORMUDZIA Amsel, 1954, *Ark. Zool.* (2)**6** : 291. *Ormuzdia* (sic) *cameratella* Amsel, orig. desig. Iran.

Ormuzdia, mis-spelling, see *Ormudzia* Amsel.

ORTHOLEPIS Ragonot, 1887, *N. Amer. Phycit.* : 6. *O. jugosella* Ragonot, by monotypy. [Central America]. No locality given in original description.

ORYCTOMETOPIA Ragonot, 1888, *Nouv. Phycit.* : 11. *O. fossulatella* Ragonot, by monotypy. Costa Rica : Irazu.

OXYBIA Hampson, 1901, *Rom. Mem.* **8** : 110. *Tinea transversella* Duponchel, by monotypy. Europe.

OXYDISIA Hampson, 1901, *Rom. Mem.* **8** : 535. *O. hyperythrella* Hampson, by monotypy. Australia : Peak-Downs.

OZAMIA Hampson, 1901, *Rom. Mem.* **8** : 34. *Trachonitis lucidalis* Walker, by monotypy. Dominican Republic.

PACONIUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 210. *P. corniculatus* Heinrich, orig. desig. Puerto Rico.

Palatka Smith, *nomen nudum*, see *Diviana* Ragonot.

PALIBOTHRA Ragonot, 1889, *Bull. Soc. ent. Fr.* **1889** : 218. *P. fuscogrisella* Ragonot, by monotypy. New Guinea : Port Moresby.

PALLORIA Amsel, 1961, *Ark. Zool.* (2)**13** : 362. *P. bicornutella* Amsel, orig. desig. Iran.

PALPUSOPSIS Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 15. *P. roseella* Amsel, orig. desig. Iran.

Paradaria Hartig, see *Hypodaria* Hartig.

PARADARIA Kuznetzov, 1908, *Izv. turkest. Otd. imp. russ. geogr. Obschch.* **4** : 118. *P. tshetverikovi* Kuznetzov, by monotypy. U.S.S.R.: Aral Sea.

PARAEMPORIA Amsel, 1951, *Ark. Zool.* (2)**1** : 544. *P. monotona* Amsel, by monotypy. Iran.

PARAMAXILLARIA Inoue, 1955, *Check-list lepid. Japan* **2** : 133. *Maxillaria meretrix* Staudinger, by monotypy of *Maxillaria* Staudinger. Turkey.

Maxillaria Staudinger, 1879, *Trudy russk. ent. Obshch.* **15** : 208. *M. meretrix* by monotypy. Turkey. Preoccupied by *Maxillaria* Gistl, 1848.

Paramyelois Heinrich, see *Amyelois* Amsel.

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[2] An earlier type-citation for *Oncocera* is given by Boisduval, 1836, *Hist. nat. Ins. Spec. Gén. Lép.* **1** : 150, which, if accepted, would make it a junior synonym of *Myelois* Hubner.

Paranephopterix Roesler, subgenus, see *Nephopterix* Hübner.

PARAROTRUDA Roesler, 1965, *Inaugural Dissertation, Saarbrücken* : 67. *Homoeosoma nesiotica* Rebel, orig. desig. Canary Is.

PARASEFIDIA Amsel, 1950, *Ark. Zool.* (2)**1** : 235. *P. benderella* Amsel, by monotypy. Iran.

PAROLYCA Dyar, 1928, *Proc. ent. Soc. Wash.* **30** : 137. *Olyca asthenosoma* Dyar, orig. desig. French Guiana.

PARRAMATTA Hampson, 1901, *Rom. Mem.* **8** : 366. *Eucarphia ensiferella* Meyrick, by monotypy. Australia.

'*Parramatta* Ragonot', auct.

Macrochilota Turner, 1913, *Proc. R. Soc. Qd* **24** : 129. *M. araeosticha* Turner by monotypy. Australia : New South Wales. (Turner, 1942 : 81.)

PARTHIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 235. *P. christophorella* Ragonot, by monotypy. U.S.S.R.: Krasnowodsk.

PASSADENA Hulst, 1900, *Can. Ent.* **32** : 171. *P. constantella* Hulst, by monotypy. U.S.A.: California.

PATAGONIA Hampson, 1901, *Rom. Mem.* **8** : 226. *Homoeosoma magellanella* Ragonot, by monotypy. Chile : Punta Arenas.

PATRICOLA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 209. *P. semicana* Heinrich, orig. desig. U.S.A.: Utah.

PEADUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 83. *Piesmopoda burdettella* Schaus, orig. desig. Costa Rica.

PEMPELIA Hübner, 1825, *Verz. bekannt. Schmett.* : 369. *Tinea ornatella* [Denis & Schiffermüller], subseq. desig., Ragonot, 1885, *Entomologist's mon. Mag.* **22** : 18. Europe.

Pempeliella Caradja, 1916, *Dt. ent. Z. Iris*, **30** : 8. *P. fraternella* Ragonot, by monotypy. Algeria. (It is possible that this genus is a mis-spelling of *Pempelia* Hübner. In the original, Caradja does not indicate *Pempeliella* as new but in all other cases the second and subsequent species in a genus are indicated only by the initial letter of the genus. Following *Pempelia* in Caradja's paper is the unabbreviated, *Pempeliella*. This suggests that a new genus was intended.)

PENETIANA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 63. *P. proleucia* Hampson, orig. desig. Indonesia : Borneo.

PHALOBATHRA Meyrick, 1932, *Exot. Microlepidopt.* **4** : 234. *P. escigera* Meyrick, by monotypy. Fiji.

PHESTINIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 57. *P. costella* Hampson, orig. desig. Jamaica.

PHILODEMA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 165. *Sarata rhoiella* Dyar, orig. desig. U.S.A.: Colorado.

PHILOSAURITIS Meyrick, 1935, *Exot. Microlepidopt.* **4** : 522. *P. pyrrhostrota* Meyrick, by monotypy. Dem. Rep. Congo [= Belgian Congo].

PHILOTROCTIS Meyrick, 1933, *Exot. Microlepidopt.* **4** : 387. *P. eutraphea* Meyrick, by monotypy. Indonesia : Java.

Phloeophaga Chrétien, see *Euzopherodes* Ragonot.

PHOBUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 138. *Dioryctria brucei* Hulst, orig. desig. U.S.A.: Colorado.

Phycidea Zeller, see *Homoeosoma* Curtis.

Phycis Fabricius, see *Phycita* Curtis.

PHYCITA Curtis, 1828, *Brit. Ent.* **5** : 233. *Phycis spissicella* Fabricius, orig. desig. Europe.

Phycis Fabricius, 1798, *Ent. Syst. Suppl.*, : 420. *Phycis spissicella* Fabricius, subseq. desig., Curtis, 1828, *Brit. Ent.* **5** : 233. Europe. Preoccupied by *Phycis* Walbaum, 1792.

Ceratium Thienmann, 1828, *Lehrb. Zool.* : 218. Replacement name for *Phycis* Fabricius. Preoccupied by *Ceratium* Schrank, 1793.

Gyra Gistl, 1848, *Nat. Thier.* : 10. Unnecessary replacement name for *Phycis* Fabricius.

Phycitodes Hampson, see *Homoeosoma* Curtis.

PHYCITOPSIS Ragonot, 1887, *N. Amer. Phycit.* : 4. *P. flavicornella* Ragonot, by monotypy. U.S.A.: Texas.

PIESMOPODA Zeller, 1848, *Isis, Leipzig* **1848** : 863. *P. rubicundella* Zeller, by monotypy. Brazil.

Aphycitopsis Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 45. *A. isabella* Dyar, by monotypy. Costa Rica. (Heinrich, 1956 : 78.)

Amphycitopsis ; mis-spelling, Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 78.

Discopalpia Ragonot, 1893, *Rom. Mem.* **7** : 167. *Myelois flavicans* Zeller, by monotypy. Colombia. (Heinrich, 1956 : 78.)

Guastica Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 80. *G. semilutea* Walker, by monotypy. Malaysia : Sarawak. (Ragonot, 1901 : 527.)

PIMA Hulst, 1888, *Entomologica am.* **4** : 114. *P. forsterella* Hulst, orig. desig. U.S.A.: Colorado. *Epischina* auct. *nec* Hübner.

Pinipestis Grote, see *Dioryctria* Zeller.

PIRIZANIA Amsel, 1954, *Ark. Zool.* (2)**6** : 288. *P. salebrosella* Amsel, orig. desig. Iran.

PIRIZANODES Amsel, 1961, *Ark. Zool.* (2)**13** : 378. *P. farsella* Amsel, orig. desig. Iran.

Pistogenes Meyrick, see *Euzophera* Zeller.

PLATYCRATES Meyrick, 1932, *Exot. Microlepidopt.* **4** : 235. *P. gypsopeda* Meyrick, by monotypy. Fiji.

***PLAGOA* nom. n.** for *Mabillia* Ragonot. *Mabillia cerostomella* Ragonot, by monotypy of *Mabillia* Ragonot. Mozambique.

Mabillia Ragonot, 1888, *Nouv. Phycit.* : 6. *M. cerostomella* Ragonot, by monotypy. Mozambique. Preoccupied by *Mabillia* Bourguignot, 1876.

PLEUROCHILA Ragonot, 1888, *Nouv. Phycit.* : 17. *P. erschoffella* Ragonot, by monotypy. U.S.S.R.: Turkestan.

PLODIA Guenée, 1845, *Annls Soc. ent. Fr.* (2)**3** : 318. *Tinea interpunctella* Hübner, by monotypy. Europe.

POGONONEURA Ragonot, 1888, *Nouv. Phycit.* : 17. *P. hirticostella* Ragonot, by monotypy. Central African Republic.

Pogonophorus Sauber, see *Pogonotrophus* Sauber.

POGONOTROPHA Zeller, 1852, *Lep. Caffr.* : 76. *P. wahlbergi* Zeller, by monotypy. South Africa.

POGONOTROPHUS Sauber, 1899, *Verh. Ver. naturw. Unterh. Hamb.* **10** : errata slip. (Correction on errata slip inserted with volume at time of issue) *P. tancrei* Sauber, by monotypy of *Pogonophorus* Sauber. Central Asia.

Pogonophorus Sauber, 1899, *Verh. Ver. naturw. Unterh. Hamb.* **10** : 63. *P. tancrei* Sauber, by monotypy. Central Asia. Preoccupied by *Pogonophorus* Latreille, 1802.

Pogonophoris (mis-spelling in index), 1899, *ibid.* **10** : 89.

Anousterunia Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 79. *P. tancrei* Sauber, orig. desig. Unnecessary replacement name for *Pogonophorus* Sauber.

POLOPEUSTIS Ragonot, 1893, *Rom. Mem.* **7** : 232. *P. annulatella* Zetterstedt, by monotypy. U.S.S.R.: Altai.

Postsalebria Amsel, see *Praesalebria* Amsel, 1954 (15 March).

Postsalebria Hanneman, see *Salebriopsis* Hanneman.

PRAECOMOTIA Amsel, 1954, *Bol. ent. Venezol.* **10** : 51. *P. minimella* Amsel, orig. desig. Venezuela.

PRAEDONULA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 82. *Phycita almonella* Dyar, orig. desig. Panama.

PRAEEPISCHNIA Amsel, 1954, *Ark. Zool.* (2)**6** : 306. *Myelois lydella* Lederer, orig. desig. Turkey.

Praesalebria Amsel, 1954 (March 21), see *Keradere* nom. n.

PRAESALEBRIA Amsel, 1954 (15 March), *Z. wien. ent. Ges.* **39** : 131. *Nephopteryx pseudoflorella* Schmidt, orig. desig. Spain.

Postsalebria Amsel, 1954, *Z. wien. ent. Ges.* **40** : 357. Unnecessary replacement name for *Praesalebria* Amsel, 1954 (15 March).

PRETORIA Ragonot, 1893, *Rom. Mem.* **7** : 624. *P. hutchinsoni* Ragonot, by monotypy. South Africa : Natal.

PRISTARTHRIA Ragonot, 1893, *Rom. Mem.* **7** : 326. *Salebria minutella* Ragonot, by monotypy. Ceylon.

Pristocera Ragonot, see *Pristocerelia* Kieffer.

PRISTOCERELIA Kieffer, 1909, *Bull. Soc. Hist. nat. Metz* **26** : 35. *Myelois solskyi* Christoph, by orig. desig. of *Pristocera* Ragonot. Iran.

Pristocera Ragonot, 1893, *Rom. Mem.* **7** : 228. *Myelois solskyi* Christoph, orig. desig. Iran. Preoccupied by *Pristocera* Klug, 1808.

Pristophora Ragonot, see *Susia* Ragonot.

Pristophorodes Amsel, see *Susia* Ragonot.

Procandiope Dyar, see *Ceracanthia* Ragonot.

PROCERATIA Hampson, 1901, *Rom. Mem.* **8** : 197. *P. caesariella* Hampson, by monotypy. Syria.

PROCUNEA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 70. *P. sidera* Hampson, orig. desig. Australia : Queensland.

PROMYLEA Ragonot, 1887, *N. Amer. Phycit.* : 5. *P. lunigerella* Ragonot, by monotypy. Canada : Vancouver.

PROROPHORA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 252. *P. curvibasella* Ragonot, by monotypy. U.S.S.R.: Turkestan.

PROSOEUZOPHERA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 275. *Euzophera impletella* Zeller, orig. desig. Colombia.

PROTASIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 193. *Valdivia mirabilicornella* Dyar, orig. desig. U.S.A.: California.

PROTOETIELLA Inoue, 1959, *Tinea* **5** : 299. *P. bipunctella* Inoue, orig. desig. Japan.

PROTOMOERBES Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 49. *P. aberrans* Heinrich, orig. desig. Colombia.

PSAMMIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 71. *P. flavipicta* Hampson, orig. desig. U.S.A.: Florida.

PSEUDOCABIMA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 53. *Myelois euzopherella* Dyar, orig. desig. Panama.

PSEUDOCADRA Roesler, 1965, *Inaugural Dissertation Saarbrücken,* : 150. *P. obscurella* Roesler, orig. desig. China : Chekiang.

PSEUDODIVONS Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 405. *P. commensella* Dyar, orig. desig. Mexico.

PSEUDOMEGASIS Chrétien, 1931, *Amat. Papillons* **5** : 162. *P. gabalitella* Chrétien, by monotypy. Morocco.

PSEUDOPHYCITA Roesler, 1969, *Bonn. zool. Beitr.* **20** : 257. *Pempelia deformella* Moeschler, orig. desig. U.S.S.R.: Krasnoarmiejsk (Sarepta).

PSEUDOSYRIA Rebel, 1926, *Bull. Soc. ent. Egypte* **10** : 180. *P. gracilis* Rebel, by monotypy. U.A.R.: Egypt.

PSOROSA Zeller, 1846, *Isis, Leipzig* **1846** : 749. *Phycis dahliella* Treitschke, subseq. desig., Ragonot, 1901, *Rom. Mem.* **8** : 103. Europe.

Ectyposa de Joannis, 1929, *Amat. Papillons* **4** : 265. *Phycis dahliella* Treitschke, orig. desig. Europe.

PSOROSANA Strand, 1915, *Arch. Naturgesch.* **80** A10 : 111. *P. testaceipennis* Strand, orig. desig. Sudan.

PSOROSINA Dyar, 1904, *Proc. ent. Soc. Wash.* **6** : 113. *P. angulella* Dyar, subseq. desig., Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 208. U.S.A.: Iowa.

PSOROSODES Amsel, 1954, *Ark. Zool.* (2)**6** : 274. *P. dalakiella* Amsel, orig. desig. Iran.

Pterothrix Ragonot, see *Pterothrixidia* Amsel.

PTEROTHRIXIDIA Amsel, 1954, *Ark. Zool.* (2)**6** : 285. *Phycis rufella* Duponchel, by orig. desig. of *Pterothrix* Ragonot. Corsica.

Pterothrix Ragonot, 1888, *Nouv. Phycit.* : 8. *Phycis rufella* Duponchel, orig. desig. Corsica. Preoccupied by *Pterothrix* Nees, 1834.

PTYOBATHRA Turner, 1905, *Proc. R. Soc. Qd* **19** : 48. *P. hypolepidota* Turner, by monotypy. Australia.

PTYOMAXIA Hampson, 1903, *J. Bombay nat. Hist. Soc.* **15** : 26. *P. trigonifera* Hampson, orig. desig. Ceylon.

PTYONOCERA Hampson, 1901, *Rom. Mem.* **8** : 526. *P. atrifusella* Hampson, by monotypy. Gambia.

PYLA Grote, 1882, *Check-list N. Amer. Moths* : 55. *Nephopteryx scintillans* Grote, by monotypy. U.S.A.: California.

Pyla Ragonot, 1887, *N. Amer. Phycit.* : 9. *P. scintillans* Grote, orig. desig. Unnecessary replacement name for *Pyla* Grote.

QUASISALEBRIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 118. *Q. admixta* Heinrich, orig. desig. U.S.A.: Utah.

RABIRIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 311. *Microphycita conops* Dyar, orig. desig. Panama.

RADIESTRA Hampson, 1927, *Entomologist's Rec. J. Var.* **39** : 170. *Euzopherodes albistrigella* Hampson, orig. desig. Ceylon.

RAMPYLLA Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 84. *R. orio* Dyar, subseq. desig., Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 70. Mexico.

RATASA Herrich-Schäffer, 1851, *Schmett. Eur.* **4** : 93. *Pyralis alienalis* Eversmann, by monotypy. U.S.S.R.: Urals.

Relmis Dyar, see *Bema* Dyar.

Repetekia Amsel, see *Repetekiodes* Amsel.

REPETEKIODES Amsel, 1961, *Ark. Zool.* (2)**13** : 364. *Repetekia gozmanyi* Amsel, by monotypy, of *Repetekia* Amsel. U.S.S.R., Transcaspia : Repetek.

Repetekia Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31** : 48. *R. gozmanyi* Amsel, orig. desig. U.S.S.R.: Repetek. Preoccupied by *Repetekia* Oshanin, 1912.

RHAGEA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 237. *Zophodia packardella* Ragonot, orig. desig. U.S.A.: California.

Rhamphodes Guenée, see *Etiella* Zincken.

Rhodophaea Guenée, subgenus, see *Eurhodope* Hübner.

Rhodophaeopsis Amsel, subgenus, see *Eurhodope* Hübner.

RHYNCHEPHESTIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 51. *R. rhabdotis* Hampson, orig. desig. Hawaii.

RHYNCHOPSELAPHUS Zerny, 1917, *Denkschr. Akad. Wiss. Wien* **93** : 437. *R. porrigens* Zerny, by monotypy. Sudan.

RIBUA Heinrich, 1940, *Proc. ent. Soc. Wash.* **42** : 31. *R. innoxia* Heinrich, orig. desig. Cuba.

RIOJA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 267. *R. nexa* Heinrich, orig. desig. Argentine : La Rioja.

ROTRUDA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 225. *Homoeosoma mucidella* Ragonot, orig. desig. U.S.A.: California.

ROTRUDOSOMA Roesler, 1964, *Boll. Ass. romana Ent.* **19** : 21. *R. parvellum* Roesler, orig. desig. Libya.

RUMATHA Heinrich, 1939, *Proc. U. S. natn. Mus.* **86** : 363. *Zophodia bihinda* Dyar orig. desig. U.S.A.: New Mexico.

SALAMBONA Heinrich, 1939, *Proc. U. S. natn. Mus.* **86** : 379. *Zophodia analamprella* Dyar, orig. desig. Argentine : Carmen Patagones.

Salebria Zeller, subgenus, see *Oncocera* Stephens.

SALEBRIACUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 114. *Nephopteryx odiosella* Hulst, orig. desig. U.S.A.: Colorado.

SALEBRIARIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 115. *Salebria ademptandella* Dyar, orig. desig. U.S.A.: Texas.

SALEBRIODES Amsel, 1950, *Ark. Zool.* (2)**1** : 234. *S. ephestiella* Amsel, by monotypy. Iran.

SALEBRIOPSIS Hanneman, 1965, *Dt. ent. Z.* (NS)**12** : 279. *Nephopterix albicilla* Herrich-Schäffer, by orig. desig. of *Postsalebria* Hanneman. Europe.

Postsalebria Hanneman, 1964, *Tierwelt Dtl. Microlepid.* **11** : 162. *Nephopterix albicilla* Herrich-Schäffer, orig. desig. Europe. Preoccupied by *Postsalebria* Amsel, 1955.

Turdoempista Roesler, 1967, *Z. Wien. ent. Ges.* **52** : 40. *Nephopterix albicilla* Herrich-Schäffer, by desig. of *Postsalebria* Hanneman. Unnecessary replacement name.

SALINARIA Ragonot, 1901, *Rom. Mem.* **8** : 11. *Myelois diffusella* Christoph, by monotypy. Europe.

SAMARIA Ragonot, 1893, *Rom. Mem.* **7** : 58. *S. indentella* Ragonot, orig. desig. Lebanon.

SANDRABATIS Ragonot, 1893, *Rom. Mem.* **7** : 203. *S. crassiella* Ragonot, by monotypy. India : Assam.

SARASOTA Hulst, 1900, *Jl N. Y. ent. Soc.* **8** : 222. *S. plumigerella* Hulst, by monotypy. U.S.A.: Florida.

Cuba Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 50. *C. furculella* Dyar, by monotypy. Cuba. (Heinrich, 1956 : 76.)

SARATA Ragonot, 1887, *N. Am. Phycit.* : 11. *S. dophnerella* Ragonot, orig. desig. U.S.A.: California.

SARDZEA Amsel, 1961, *Ark. Zool.* (2)**13** : 371. *S. diviselloides* Amsel, orig. desig. Iran.

SCHENECTADIA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 348. *S. merilesella* Dyar, orig. desig. Panama.

Sciota Hulst, see *Nephopterix* Hübner.

SCLEROBIA Ragonot, 1893, *Rom. Mem.* **7** : 528. *Hypochalcia tritalis* Walker, by monotypy. Australia : Sydney.

SCLEROBIODES Amsel, 1951, *Ark. Zool.* (2)**1** : 535. *S. persica* Amsel, by monotypy. Iran.

SCORYLUS Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 72. *S. cubensis* Heinrich, orig. desig. Cuba.

SCYTHROPHANES Turner, 1947, *Trans. R. Soc. S. Aust.* **71** : 45. *Unadilla apatelia* Turner, orig. desig. Australia : Brisbane.

SEEBOLDIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 253. *S. korgosella* Ragonot, by monotypy. U.S.S.R.: Krasnoarmiejsk (Sarepta).

SEFIDA Amsel, 1950, *Ark. Zool.* (2)**1** : 235. *S. persica* Amsel, by monotypy. Iran.

SELAGIA Hübner, 1825, *Verz. bekannt. Schmett.* : 371. *Tinea argyrella* [Denis & Schiffermüller], subseq. desig., Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 15. Europe.

SELGA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 265. *Heterographis arizonella* Hulst, orig. desig. U.S.A.: Arizona.

SEMATONEURA Ragonot, 1888, *Nouv. Phycit.* : 9. *S. atrovenosella* Ragonot, by monotypy. Peru : Chanchamayo.

Semnia Guenée, see *Eurhodope* Hübner.

SEMPRONIA Ragonot, 1888, *Nouv. Phycit.* : 24. *S. stygella* Ragonot, by monotypy. Australia : Sydney.

Seneca Hulst, see *Acrobasis* Zeller.

SENGANIA Amsel, 1951, *Ark. Zool.* (2)**1** : 538. *S. ruhmekorfi* Amsel, by monotypy. Iran.

SERRULACERA Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31** : 45. *Phycis gregella* Eversmann, orig. desig. U.S.S.R.: Urals.

SIGELGAITA Heinrich, 1939, *Proc. U. S. natn. Mus.* **86** : 382. *S. chilensis* Heinrich, orig. desig. Chile.

SIGMARTHRIA Ragonot, 1888, *Nouv. Phycit.* : 23. *S. palpella* Ragonot, by monotypy. Malaysia : Sarawak.

SINGHALIA Hampson, 1899, *J. Bombay nat. Hist. Soc.* **12** : 309. *Critonia sarcoglauca* Hampson, by monotypy. Ceylon.

Cyphomia Meyrick, 1933, *Exot. Microlepidopt.* **4** : 385. *C. cymogramma* Meyrick, by monotypy. India : Madras. (Martin, 1956 : 163.)

SOSIPATRA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 294. *Ephestia rileyella* Ragonot, orig. desig. U.S.A.: Utah.

SPATULIPALPIA Ragonot, 1893, *Rom. Mem.* **7** : 19. *S. effrosella* Ragonot, by monotypy. India : Assam.

SPECTROBATES Meyrick, 1935, *Exot. Microlepidopt.* **4** : 553. *S. artonoma* Meyrick, by monotypy. Indonesia : Java.

Ectomyelois, sensu Roesler, 1965, *nec* Heinrich, 1956.

SPERMATOPHTHORA Lederer, 1852, *Verh. zool.-bot. Ges. Wien* **2** : 132. *S. hornigii* Lederer, by monotypy. Austria.

SPOROPHYLA Meyrick, 1905, *Trans. ent. Soc. Lond.* **1905** : 224. *Crocydophora oenospora* Meyrick, by monotypy. New Zealand.

STANEMPISTA Roesler, 1969, *Ent. Z. Frankf. a. M.* **79** : 21. *Staudingeria schawerdae* Zerny, orig. desig. Spain.

STAUDINGERIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 249. *Ancylosis morbosella* Staudinger, orig. desig. Turkey : Amasia.

Stenoptycha Heinemann, see *Euzophera* Zeller.

STEREOBELA Turner, 1905, *Proc. R. Soc. Qd* **19** : 51. *S. leucomera* Turner, by monotypy. Australia : Queensland.

STHENOBELA Turner, 1904, *Proc. R. Soc. Qd* **18** : 135. *S. niphostibes* Turner, by monotypy. Australia : Queensland.

STOMOCLISTA Meyrick, 1932, *Exot. Microlepidopt.* **4** : 232. *S. diplosema* Meyrick, by monotypy. Indonesia : Java.

STOMOPHYLACTIS Meyrick, 1933, *Exot. Microlepidopt.* **4** : 389. *S. improba* Meyrick, by monotypy. Indonesia : Java.

STREPHOMESCINIA Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 60. *S. schausella* Dyar, by monotypy. Cuba.

Strymax Dyar, see *Unadilla* Hulst.

STYLOBASIS Hampson, 1901, *Rom. Mem.* **8** : 198. *S. rubripurpurea* Hampson, by monotypy. Mexico.

STYLOPALPIA Hampson, 1901, *Ann. Mag. nat. Hist.* (7)**7** : 257. *S. luniferella* Hampson, by monotypy. Bahamas.

STYPHLORACHIS Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 76. *S. mesophaea* Hampson, orig. desig. Malawi.

SUCCADANA Ragonot, 1888, *Nouv. Phycit.* : 13. *S. marmorella* Ragonot, by monotypy. Malaysia : Sarawak.

SUSIA Ragonot, 1888, *Nouv. Phycit.* : 5. *S. discomaculella* Ragonot, by monotypy. Iran : Schahkuh.

Pristophora Ragonot, 1877, *Annls Soc. ent. Fr.* **1877** : 229. *P. ruptifasciella* Ragonot, orig. desig. U.S.S.R.: Askhabad. Preoccupied by *Pristophora* Newman, 1837. (Ragonot, 1893: 422.)

Pristophorodes Amsel, 1953, *Beitr. naturk. Forsch. SüdwDtl.* **12** : 14. *P. ruptifasciella* Ragonot, by designation of *Pristophora* Ragonot. Unnecessary replacement name.

SYMPHESTIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 58. *Euzopherodes ephestiella* Hampson, orig. desig. Sikkim.

SYMPHONISTIS Turner, 1904, *Proc. R. Soc. Qd* **18** : 135. *Nephopteryx monospila* Lower, by monotypy. Australia.

SYNALLOREMA Gozmany, 1958, *Annls hist.-nat. Mus. natn. hung.* (NS)**9** : 223. *Nephopterix triangulella* Ragonot, orig. desig. Japan.

SYNORIA Ragonot, 1888, *Nouv. Phycit.* : 27. *Pyralis antiquella* Herrich-Schäffer, orig. desig. Turkey : Amasia.

Synothmia Hampson, see *Oedothmia* Hampson.

SYNTYPICA Turner, 1905, *Proc. R. Soc. Qd* **19** : 44. *S. aleurodes* Turner, by monotypy. Australia : Victoria, Birchip.

SYRIA Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 244. *Anerastia arenosella* Staudinger, orig. desig. Spain : Chiclana.

TACOMA Hulst, 1888, *Entomologica am.* **4** : 115. *T. feriella* Hulst, orig. desig. U.S.A.: Texas.

TAFTANIA Amsel, 1951, *Ark. Zool.* (2)**1** : 533. *Pristophora oxycyma* Meyrick, by monotypy. Iraq.

TAPROBANIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 51. *Homoeosoma glaucochroa* Hampson, orig. desig. Ceylon.

TARQUITIA Ragonot, 1893, *Rom. Mem.* **7** : 215. *T. jacksoni* Ragonot, by monotypy. Tanzania, (70 mls from coast opposite Zanzibar).

TELEOCHYTIS Meyrick, 1933, *Exot. Microlepidopt.* **4** : 389. *T. porphyrorphna* Meyrick, by monotypy. Indonesia : Java.

TELETHUSIA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 136. *Pempelia ovalis* Packard, orig. desig. U.S.A.: Maine.

TENELLOPSIS Amsel, 1961, *Ark. Zool.* (2)**13** : 379. *T. microphycita* Amsel, orig. desig. Iran.

TEPHRIS Ragonot, 1893, *Rom. Mem.* **7** : 446. *Pempelia cyriella* Erschoff, orig. desig. U.S.S.R.: Turkestan.

THERMOPTERYX Hampson, 1912, *J. Bombay nat. Hist. Soc.* **21** : 1254. *T. rubrifusa* Hampson, orig. desig. Ceylon.

THIALLELA Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 120. *T. signifera* Walker, by monotypy. Malaysia : Sarawak.

Luconia Ragonot, 1888, *Nouv. Phycit.* : 7. *L. pallidobasella* Ragonot, by monotypy. Malaysia : Sarawak. (Ragonot, 1901 : 511.)

THOSPIA Ragonot, 1888, *Nouv. Phycit.* : 28. *T. crassipalpella* Ragonot, orig. desig. Iran : Schahkuh.

THYLACOPTILA Meyrick, 1885, *Entomologist's mon. Mag.* **22** : 105. *T. paurosema* Meyrick, by monotypy. Cape Verde Is : St. Vincent.

Bussa Ragonot, 1888, *Nouv. Phycit.* : 24. *B. maculella* Ragonot, by monotypy. Ghana. (Ragonot, 1901 : 547)

TINESTRA Hampson, 1908, *J. Bombay nat. Hist. Soc.* **18** : 260. *T. micralis* Hampson, orig. desig. Ceylon.

TLASCALA Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 146. *Nephopteryx reductalis* Walker, orig. desig. Honduras.

TORNOCOMETIS Meyrick, 1934, *Exot. Microlepidopt.* **4** : 496. *T. chrysopila* Meyrick, by monotypy. Fiji.

TOTA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 170. *Elasmopalpus galdinella* Schaus, orig. desig. Galapagos Islands.

TRACHONITIS Zeller, 1848, *Isis, Leipzig* **1848** : 606. *Tinea cristella* Hübner, by monotypy. Europe.

TRACHYCERA Ragonot, 1893, *Rom. Mem.* **7** : 2. *Rhodophaea pallicornella* Ragonot, by monotypy. U.S.A.: Texas.

TRACHYPTERYX Ragonot, 1893, *Rom. Mem.* **7** : 566. *Myelois magella* Zeller, orig. desig. South Africa.

TRANSCASPIA Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31** : 50. *T. repetekella* Amsel, orig. desig. Jordan : Repetek.

TRIAEONONEURA Ragonot, 1893, *Rom. Mem.* **7** : 312. *Acrobasis laticinctella* Walker, by monotypy. Egypt.

TRICHORACHIA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 65. *T. leonina* Hampson, orig. desig. Sierra Leone.

Trigonopyralis Amsel, see *Euzopherodes* Ragonot.

TRISIDES Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 78. *T. bisignata* Walker, by monotypy. Malaysia : Sarawak.

TRISSONCA Meyrick, 1882, *Proc. Linn. Soc. N. S. W.* **7** : 158. *Spermatophthora mesactella* Meyrick, by monotypy. Australia : New South Wales.

TRYCHNOCRANA Turner, 1925, *Trans. R. Soc. S. Aust.* **49** : 44. *T. abditiva* Turner, by monotypy. Australia : Queensland.

TUCUMANIA Dyar, 1925, *Insecutor Inscit. menstr.* **13** : 224. *T. tapiacola* Dyar, orig. desig. Argentine.

TULSA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 134. *Nephopteryx finitella* Walker, orig. desig. U.S.A.

Turdoempista Roesler, see *Salebriopsis* Hanneman.

TYLOCHARES Meyrick, 1883, *Entomologist's mon. Mag.* **19** : 256. *Myelois cosmiella* Meyrick, by monotypy. Australia.

UFA Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 79. *U. venezuelalis* Walker, by monotypy. U.S.A.: Colorado.

ULOPHORA Ragonot, 1890, *Bull. Soc. ent. Fr.* (6)**10** : vii. *U. groteii* Ragonot, by monotypy. U.S.A.: California.

Acromeseres Dyar, 1919, *Insecutor Inscit. menstr.* **7** : 41. *A. dialithus* Dyar, by monotypy. Cuba. (Heinrich, 1956 : 176.)

UNADILLA Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 197. *U. nasutella* Hulst, orig. desig. U.S.A.: New Mexico.

Strymax Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 344. *S. dorae* Dyar, orig. desig. Panama. (Heinrich, 1956 : 227.)

UNADILLIDES Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 53. *Homoeosoma distichella* Meyrick, orig. desig. Sierra Leone.

UNCINOMORPHA Amsel, 1958, *Sber. öst. Akad. Wiss.* (1)**167** : 555. *U. bamella* Amsel, by monotypy. Iran.

UNCINUS Amsel, 1951, *Ark. Zool.* (2)**1** : 537. *U. hypogryphellus* Amsel, by monotypy. Iran.

URBANIA Hampson, 1901, *Rom. Mem.* **8** : 81. *U. lophopterella* Hampson, by monotypy. South Africa, Natal.

'*Urbania* Ragonot', auct.

VAGOBANTA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 289. *Cryptoblabes divergens* Butler, orig. desig. Chile.

Valdivia Ragonot, see *Maricopa* Hulst.

VALVA Amsel, 1961, *Ark. Zool.* (2)**13** : 373. *V. candiopella* Amsel, orig. desig. Iran.

VARNERIA Dyar, 1904, *Proc. ent. Soc. Wash.* **6** : 114. *V. postremella* Dyar, by monotypy. U.S.A.: Kentucky.

VELDTICOLA Hampson, 1930, *Ann. Mag. nat. Hist.* (10)**5** : 73. *V. striatella* Hampson, orig. desig. South Africa : Transvaal.

VERINA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 288. *Moodna suplicella* Dyar, orig. desig. Panama.

VEZINA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 291. *V. parasitaria* Heinrich, orig. desig. Argentine : José C. Paz, Prov. of Buenos Aires.

VIETTEIA Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31** : 36. *Myelois terstrigella* Chrétien, by monotypy. U.S.S.R.: Krasnowodsk.

VINICIA Ragonot, 1893, *Rom. Mem.* **7** : 461. *Salebria gypsopa* Meyrick, orig. desig. Australia : Adelaide.

VITULA Ragonot, 1887, *N. Amer. Phycit.* : 14. *V. dentosella* Ragonot, orig. desig. U.S.A.: Florida.

Eccopsia Dyar, 1902, *Bull. U. S. natn. Mus.* **52** : 430. *Vitula serratilineella* Ragonot, by monotypy. U.S.A.: California. (Heinrich, 1956 : 285.) (Attributed by Dyar to Ragonot, 'in manuscript'.)

VOGTIA Pastrana, 1961, *Revta Invest. agric. B. Aires* **15** : 265. *V. malloi* Pastrana, orig. desig. Argentine.

VOLATICA Heinrich, 1956, *Bull. U. S. natn. Mus.* **207** : 290. *Zophodia pachytaeniella* Ragonot, orig. desig. Brazil.

VOLOBILIS Walker, 1863, *List Spec. Lepid. Ins. B. M.* **27** : 111. *V. biplaga* Walker, by monotypy. Malaysia : Sarawak.

WUNDERIA Grossbeck, 1917, *Bull. Am. Mus. nat. Hist.* **37** : 133. *W. neaeriatella* Grossbeck, orig. desig. U.S.A.: Florida.

Xenephestia Gozmany, see *Ephestia* Guenée.

YOSEMITIA Ragonot, 1901, *Rom. Mem.* **8** : 17. *Spermatophora graciella* Hulst, by monotypy. U.S.A.: Texas.

ZAMAGIRIA Dyar, 1915, *Proc. U. S. natn. Mus.* **47** : 329. *Z. dixolophella* Dyar, orig. desig. Panama.

ZOPHODIA Hübner, 1825, *Verz. bekannt. Schmett.* : 370. *Tinea convolutella* Hübner, subseq. desig., Hulst, 1890, *Trans. Am. ent. Soc.* **17** : 172. Europe.

Dakruma Grote, 1878, *Bull. U. S. geol. geogr. Surv. Territ.* **4** : 702. *D. turbatella* Grote, by monotypy. U.S.A.: Illinois. (Heinrich, 1956 : 238.)

ZOPHODIODES Ragonot, 1887, *Annls Soc. ent. Fr.* **1887** : 241. *Z. leucocostella* by monotypy Turkey : Amasia.

Zophodiopsis Fromholz, see *Metoecis* Mabille.

***ZYNODES* nom. n.** for *Blabioides* Hampson. *Blabioides strigerella* Hampson, by monotypy of *Blabioides* Hampson. Ceylon.

Blabioides Hampson, 1903, *J. Bombay nat. Hist. Soc.* **15** : 25. *B. strigerella* Hampson, by monotypy. Ceylon. (Preoccupied by *Blabioides* Hampson, 1900.)

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Turner, A. J. 1942. Fragmenta Lepidopterologica. *Proc. R. Soc. Qd* **53** : 61–69.

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(PHTHIRAPTERA : INSECTA)

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THERESA CLAY

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(PHTHIRAPTERA : INSECTA)

BY

THERESA CLAY

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THE AMBLYCERA (PHTHIRAPTERA : INSECTA)

By THERESA CLAY

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SYNOPSIS

The taxonomic characters used for the separation of the families comprising the Amblycera are described and the relationships of these families discussed, with special reference to the lice of the Marsupials. A discussion on the suprageneric divisions of the Phthiraptera and a key to these are included.

INTRODUCTION

ELSEWHERE (Clay, 1969), a key to the genera of the Menoponidae together with an assessment of the taxonomic characters of that family has been published. Such characters have now been studied in the other families of the Amblycera with a view to finding a more reliable basis for the relationships within the superfamily. For the purpose of this review the Amblycera are divided as follows: Menoponidae;

Boopidae; Laemobothriidae; Ricinidae; Trimenoponidae; Gyropidae (Protogyropinae, Gyropinae, Gliricolinae).

CHARACTERS FOR THE SEPARATION OF FAMILIES

1. *Head Setae and Sensilla.* It has been shown (Clay, 1969) that in the Menoponidae these conform to certain patterns. Parts of the setal patterns are similar in the Boopidae and to a lesser extent in the Laemobothriidae ; usually in this latter family and in the Boopidae, with the exception of *Latumcephalum* and *Paraboopia*, the alveoli of two of the temple head setae (26 and 27 ; Clay, 1969, figs. 2–3) are contiguous as in many of the Menoponidae. In the other families the chaetotaxy is different, although some of the setae as numbered in the Menoponidae are identifiable ; in the New World mammal-infesting families the differences are largely due to the increase in the number of setae. Some of the genera of the Boopidae have the number and position of the head sensilla similar to the condition in most of the Menoponidae.

2. *Antennal Sensilla.* The antenna of the Phthiraptera never has more than five segments : the scape, pedicel and a flagellum of three segments, the last two in the Amblycera frequently being fused to form a single segment. In addition to the sensory setae, there are sense organs on the last two segments of the flagellum or, in those species in which these two segments are fused, the sense organs are found on the terminal segment only. The Menoponidae have a sensillum coeloconicum on each of the last two segments in the five-segmented antenna and two on the terminal segment in the four-segmented antenna (Clay, 1969). The Boopidae (Pl. 1, fig. 1) and the Ricinidae (Pl. 1, fig. 2) also have this arrangement of the sensilla ; the Laemobothriidae with four segments differ in having three sensilla on the terminal segment (Pl. 1, fig. 3).

Unlike these groups, the Trimenoponidae and Gyropidae show considerable superficial diversity in the form of the antennal sense organs even within genera. As the antenna is always four-segmented in these families the sense organs, also probably modified sensilla coeloconica, are on the terminal segment. Examination with the light and scanning electron microscopes[1] (SEM) shows that there are four adjacent sense pegs forming the sense organ (Pl. 3, fig. 13). Two of these pegs are conspicuous furrowed structures, visible from the surface view and two are smaller and of a different form, each arising within an inner cavity and frequently not visible from the surface. The differences between the sense organs are shown in the types of cavities in which the pegs occur, the following being examples : a. Two surface cavities, so that superficially this type appears rather similar to that of the Menoponidae, but it has four, not two, sense pegs (Pl. 1, fig. 4, *Gyropus ovalis*). b. The four pegs are in four cavities with four separate small openings on the lateral surface of the antenna (Pl. 1, fig. 5, *Macrogyropus dicotylis*). c. Four larger

[1] SEM photographs. The antenna of the Phthiraptera have presented certain problems of cleaning and coating for the SEM. It has, however, been an agreeable surprise that specimens originally treated with KOH and mounted in Canada Balsam can be removed from the slide and used ; also, after appropriate treatment, so can dried material collected from skins. This has made it possible to photograph the antennal sense organs of such South American genera as *Protogyropus*, *Harrisonia* and *Cummingsia*, which are rare in collections.

separate openings on the tip of the terminal segment, some of which may be protected by outgrowths from the margin, the two larger sense pegs are easily visible from the surface but the two cavities with the smaller pegs usually appear empty from this view (Pl. 1, fig. 6). This type is found in *Gyropus freitasi*, *G. lenti*, *Macrogyropus heteronychus* and *Protogyropus* ; in *Phtheiropoios wetmori* the cavities containing the larger pegs are wider and the inner sides are tuberculate (Pl. 2, fig. 7). d. In this there is virtually one cavity, the walls between not reaching to the surface (Pl. 2, fig. 8. *Macrogyropus amplexans*). Types a–d are found in the Gyropinae. e. A single outer cavity with the two large pegs each end and a central inner cavity divided into two with the other two sense pegs, which are sometimes visible from the surface ; the outer cavity may or may not be protected by processes from the cavity margin (Pl. 2, figs 9–11 ; Pl. 3, figs 13–14). This type is found in *Gliricola* and *Pitrufquenia* (Gliricolinae) and *Cummingsia*, *Harrisonia* and *Philandesia* (Trimenoponidae). *Trimenopon hispidum* (Trimenoponidae) has a similar organ but the base of the cavity is composed of a number of small cavities and the organ is large and may incorporate one of the antennal setae (Pl. 2, fig. 12).

In the New World Amblycera there is a tendency for a breakdown of the intervening walls of the four cavities to form one large cavity. This type of organ could have been developed only in a group with a four-segmented antenna in which the sense organs are adjacent to each other. In the Menoponidae the antenna may be four- or five-segmented and the sensilla either adjacent or on separate segments. These facts together with evidence (Symmons, 1952) suggesting that the Menoponidae are the most primitive of the Phthiraptera, make it probable that the type of antennal sense organ found in this family is the most primitive. If the characters of the antennal sense organ reflect relationships, then in the Amblycera these would suggest a relationship between the Menoponidae, Boopidae, Ricinidae and Laemobothriidae on one hand and between the Gyropidae and Trimenoponidae on the other, with perhaps a closer relationship between the Trimenoponidae and the Gliricolinae. These sense organs have been considered entirely from the point of view of their value in taxonomy ; further studies by other methods are necessary to understand their histology and physiology.

As the Ischnocera are believed to be less primitive than the Amblycera (Hopkins, 1949, Symmons, 1952) and differ from them in many features it is of interest to consider their antennal sense organs. These differ markedly from those of the Amblycera, having in addition to cavities with a sense peg, other sensory areas. These areas in *Trichodectes*, when studied by means of a stereo pair of SEM photographs, are seen to be saucer-shaped structures, each with a central raised area and a varying number of radiating ridges separated by narrow grooves (Pl. 3, fig. 18). In the Philopteridae, in which there are five antennal segments, the organ on segment V comprises two of the saucer-like sensilla and a third sensillum with a central cavity containing the sense peg ; the whole sometimes surrounded by a number of grooves. The position of these three sensilla relative to one another may prove to be of taxonomic value (Pl. 3, figs 15, 16). On segment IV there is a similar organ, but this has only one of the saucer-like sensilla. In *Trichodectes melis* (Trichodectidae), in which the terminal segments of the antenna are fused, the sensilla are similar to those of the Philopteridae but lie adjacent to each other on the last segment (Pl. 3, fig. 17). A more detailed study of the antennal sense organs of the Ischnocera is being undertaken.

Haematomyzus (Rhynchophthirina) has antennal sense organs similar to those of the Ischnocera ; a cavity and two saucer-like areas with raised ridges on segment V (Pl. 4, figs 19, 20) and a single saucer-like area and a cavity on segment IV. The cavity on both segments differs from that found in the Ischnocera in having the sense peg surrounded by a number of protruding leaf-like filaments (Pl. 4, fig. 21). In at least some of the Anoplura (e.g. *Haematopinus tuberculatus*), the sense organ on segment V is similar to that found in the Ischnocera in having a cavity and two saucer-like areas with internal ridges, each area and the whole group being surrounded by a number of grooves.

The similarity of these antennal sense organs in the Ischnocera, Rhynchopthirina and Anoplura and their differences from those of the Amblycera, is further support for the taxonomic division between the Amblycera and the former three groups.

3. *Mouthparts.* These are fundamentally the same in all the Amblycera, with the exception of some of the Ricinidae (Clay, 1949). The mandibles of the Menoponidae, Laemobothriidae and Philopteridae (Ischnocera) have a conspicuous bunch of filaments attached posteriorly, which are here considered to be the prostheca ; some at least of the Trichodectidae (Ischnocera) also have this but the filaments are shorter and less conspicuous. A prostheca of this form has not been seen in the examination of whole mounts and dissections of specimens belonging to the Ricinidae, Boopidae, Trimenoponidae and Gyropidae, in which it is perhaps secondarily lost. This form of filamentous prostheca is found in at least some of the Psocoptera. The number of segments forming the maxillary palpus is rarely five (*Trimenopon*), commonly four and frequently less in the New World mammal-infesting forms. Apart from the majority of the Menoponidae, only the Boopidae and Laemobothriidae have the pair of subterminal setae, one of which is peglike, on the terminal segment of the maxillary palpus (Clay, 1968, Pl. 1, figs 6–7). The labial palpi are present in all the families with the exception of the Ricinidae. In all the Menoponidae there are five terminal setae on this palp, four or five in the Boopidae and the Gyropinae, four in the Trimenoponidae and not more than three in the Gliricolinae. The hypopharynx shows so much variation in reduction and modification of its parts between and within generic and suprageneric taxa that its form is of doubtful use in the consideration of relationships.

4. *Tentorium.* Symmons (1952) placed the tentorium of the Amblycera in five groups based on the amount of reduction in its sclerotization. She showed that there was no obvious correlation between the form of the tentorium and of the mouth parts or with the degree of sclerotization of the head and suggested that its form, therefore, might be of phylogenetic significance. However, Symmons herself (1952 : 388) showed that there was some parallel reduction in the amount of sclerotization, citing the non-sclerotization of the posterior part of the anterior arms in *Trinoton* and *Piagetiella* (Menoponidae), *Heterodoxus* (Boopidae), *Gyropus* (Gyropidae) and the non-sclerotization of the bridge in *Piagetiella, Heterodoxus, Gyropus, Gliricola, Trimenopon Laemobothrion* and *Ricinus;* this may also be the case

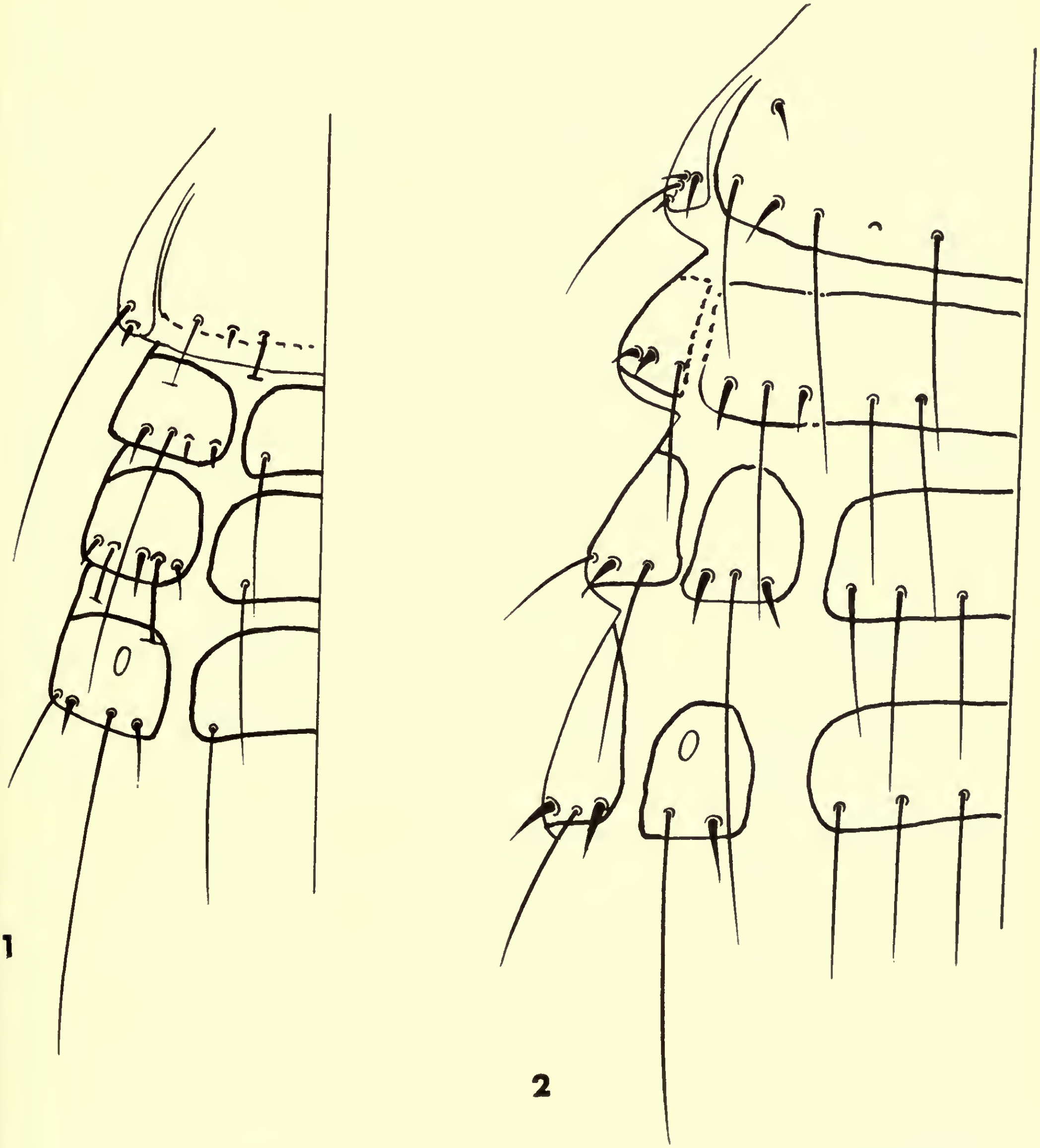
in *Pacifimenopon* (Menoponidae). Thus, although there is a reduction in the tentorial sclerotization in the mammal-infesting Amblycera, there is a similar though lesser reduction in some of the Menoponidae, so that this does not necessarily denote relationship in all cases. There is variation within the Menoponidae of the position of the base of the antenna relative to the posterior articulation of the mandible and also of the position of the ommatidia, or the ocular seta where the former are not apparent, in relation to the posterior end of the antennal fossa. This variation is presumably due to the shortening or lengthening of different areas of the head, which also effects the position of the tentorial pits. One of the features, according to Symmons, showing the similarity between *Ricinus* and *Laemobothrion* is the position of the posterior tentorial pits near the occipital foramen. *Ricinus* and *Laemobothrion* have a superficial resemblance due to the elongation of the head in an antero-posterior direction and to the posterior elongation of the parietal areas (temples). In fact, the heads in the two families are rather different. In the Ricinidae the elongation of the head has taken place in the clypeal area in front of the anterior tentorial pits, which thus appear to lie rather more posteriorly than in other genera. The antennae and ommatidia are in a posterior position on the head and in *Trochiloecetes*, in which there is no posterior lengthening of the parietal area, the posterior point of the antennal fossa is almost on the postero-lateral corner of the head. In *Laemobothrion*, although the antennal base and the ommatidia are rather far removed from the posterior mandibular articulation, they are approximately in the middle of the head and the anterior tentorial pits in their most common position, that is at the level of the posterior mandibular articulation. Symmons showed that *Ricinus* and *Laemobothrion* have a fine ligament in place of the usual sclerotized bridge, although in *L. opisthocomi* (not seen by Symmons) the bridge is as broad as in some of the Menoponidae. Symmons (: 379) has shown that *Laemobothrion* differs from *Ricinus* in the absence of the ventral prothoracic muscles, there being no trace of their apodemes from the bridge in the former genus. Symmons placed *Ricinus* and *Laemobothrion* together in one of her phylogenetic groups, but perhaps there is no reason to consider the Ricinidae to be nearer related to the Laemobothriidae than either are to the Menoponidae. This is further discussed below.

5. *Legs.* These show considerable diversity even within families and between genera parasitic on the same host species, where the same adaptive forces might be presumed to operate. There is variation in the length of the tarsal segments, the angle at which the second tarsal segment joins the first and the presence or absence of a well-developed first euplantula, apart from the extreme modifications of the tarsus and tarsal claws found in the Gyropidae. Even if the first euplantula is well developed in the Boopidae, Trimenoponidae and Gyropidae it does not have the typical striated or banded appearance found in most of the Menoponidae (Clay, 1969 : 14), although in species of the former families it may be tuberculate. Many of the Boopidae have processes (Pl. 5, fig. 25) on the second tarsal segment similar to the condition in *Pseudomenopon* (Clay, 1969) and believed by Kéler to represent the second euplantula. All the Amblycera have two tarsal claws, with the exception of the Gyropidae, which never have more than one claw on the second and third

legs. There is some controversy about the presence or absence of claws in the Gliricolinae (Kéler, 1955 ; Mayer, 1954). Kéler's interpretation of the *Gliricola* leg is followed here, that is a two-segmented tarsus, the second bearing a narrow seta-like claw and a large euplantula. The majority of the Menoponidae have either ctenidia or brushes of setae on the venter of the third femur ; one genus (*Microctenia*) has comb-like projections in this position (Clay, 1969, Pl. 6, fig. 32) ; the Laemobothriidae also have comb-like projections (Pl. 4, fig. 22), but quite dissimilar from those of *Microctenia*. All the remaining families, as in some of the Menoponidae, have no definite ctenidia or brushes. The Gyropidae with the exception of *Protogyropus* have at least one pair of legs modified for clasping the hair of the host as described by Ewing, 1924. An important feature of the leg separating the Boopidae and avian-infesting Amblycera from the New World mammal-infesting families is the form of the first coxa. It has been described in *Myrsidea* (Menoponidae) by Mayer (1954 : 100) as an elongate bladder lying flat on the body with its caudal end on the sternum in the form of a closed sac and its cranial end joined to the first pleural ridge by a single condylar joint ; this makes the first coxa a characteristic feature of the Boopidae and avian-infesting Amblycera.

6. *Thorax and Abdomen*. These two parts of the body are considered together as in many Amblycera there is a close association between the thorax and the first abdominal segment. In the mammal-infesting Amblycera there is a tendency towards the reduction of the anterior segmentation by various degrees of fusion of the thoracic segments, reduction of the first abdominal segment and its fusion with the metathorax. In the Boopidae the mesonotum is distinct but there has been some confusion about the metanotum and its relation to tergum I. Tergum II, identified by being next to the first spiracle-bearing segment which is always III, is fully developed and it seems probable that the plate immediately anterior to this is the fused metanotum and tergum I. Each side of a typical Menoponid metanotum (Text-fig. 3) is a narrow suture separating off the metapleurite, the inner dorsal seta (d) of which is frequently spine-like ; the outermost posterior marginal seta (o) of the metanotum is usually long. In the Boopidae it is possible to make out a similar pattern : immediately posterior to the mesonotum (Text-figs 4, 5) is a plate separated or partly separated each side by a suture from a lateral sclerite bearing spiniform setae at two levels. The central plate is transversely divided by an indistinct suture, anterior to which is a line of setae, the outermost one being long and here identified as the outer metanotal seta ; lateral to this seta is a spiniform seta, presumably homologous with the metapleural seta of the Menoponidae. Near the posterior margin of the central plate are other setae, presumed to be those of tergum I ; at this level laterally is a spiniform seta, presumed to be that of pleurite I. The SEM picture on Pl. 5, fig. 26 shows the dual nature of the central plate. Further evidence is seen in the species of *Paraheterodoxus* (Text-fig. 5) in which there is a pair of strongly spiniform setae in the posterior row of the central plate similar in form and position to the pair found on each of terga II-VIII. There seems little doubt therefore that in the Boopidae tergum I is present but fused to the metanotum. In the Trimenoponidae, according to Kéler (in press), the fusion of the thoracic segments shows much variation : the meso- and metanotum may be

fused (*Harrisonia*), the meso- and pronotum fused (*Trimenopon* and *Cummingsia*) or the mesonotum free (*Philandesia*). Tergum I in all the Trimenoponidae is reduced to a greater or lesser extent, but is free. The Gyropidae also show considerable variation in the amount of fusion of the thoracic segments, and the fusion and reduction of tergum I. All three thoracic nota may be fused (*Monothoracius*),



FIGS 1–2. *Eidmanniella* sp. Dorsal view of part of metathorax and anterior abdominal segments, somewhat diagramatic. 1, Second nymphal instar. 2, Third instar.

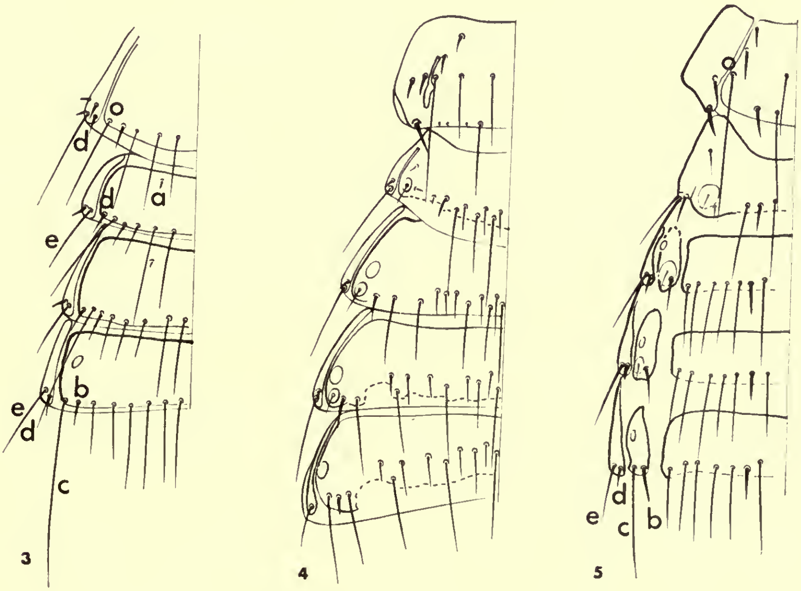
or the meso- and metanotum fused or all may be separate (*Macrogyropus dicotylis*). Tergum I may be free and well developed (*Pitrufquenia*) or considerably reduced in size but free or fused to the metanotum (*Protogryropus*). In *Protogyropus* the meso- and metanotum and tergum I are all fused together. The mesonotum is free in the Menoponidae and Boopidae but fused with the metanotum in the Laemobothriidae and the Ricinidae. Tergum I and II are fully developed in the Menoponidae and Laemobothriidae, except in some female Menoponidae in which the anterior segments of the abdomen are modified ; in the Ricinidae tergum I is fused with the pteronotum as in *Protogyropus*. This variation in the fusion of the thoracic and abdominal segments and the similarity of the condition in unrelated groups and the differences within related groups indicates that these modifications must have taken place independently on many occasions ; they are probably of little value in considering relationships.

The oblong heavily sclerotized postnotum as found in the majority of the Menoponidae is present in the Boopidae, together with the cluster of four anterior (medio-anterior) mesonotal setae, also characteristic of most of the Menoponidae. A postnotum of this type is present in some species of the Gyropidae and Trimenoponidae but the associated cluster of small setae has not been seen in these forms.

There are certain setae and groups of setae on the abdomen remaining constant in number and in position relative to each other within the higher taxonomic categories ; these may form useful landmarks in the study of homologies. In previous papers (Clay, 1962, 1966) these setae, such as those of the post-spiracular complex, have been omitted from the tergal counts which are given to show variation and should not preferably include non-variable setae. In all the Menoponidae and Laemobothriidae there is a small to minute seta (Text-fig. 3, a) each end of the anterior region of tergites I or II or both, perhaps having a proprioceptive function for the movements of the thorax and anterior segments. In the Boopidae this seta is present on tergum II in *Heterodoxus*, in which the post-spiracular seta is on the tergite. In *Boopia*, with the post-spiracular seta on the lateral plate, there is no seta a on tergite II but a small anterior seta on the lateral plate (absent in *Heterodoxus*) probably represents a. The most important group of setae are those associated with the spiracle and discussed below in section 7.

7. *The Abdominal Sclerites and the Spiracles.* For the purpose of the following discussion an abdominal segment is considered to have basically three sclerotized plates : a tergal (tergite), a sternal (sternite) and a lateral. All the Amblycera have one pair of thoracic spiracles and six pairs of abdominal ones opening on segments III-VIII, with the exception of the Trimenoponidae and the Gliricolinae which have five pairs on segments III-VII. The apparent position of the spiracles on the segment varies in different families and in one case within a family, but before discussing the significance of this it is necessary to consider the post-spiracular complex of setae. In the Menoponidae this complex comprises four setae as follows : the post-spiracular seta, marginal or submarginal each end of tergites I-VIII, usually long and stout on at least some segments (Text-fig. 3, c) ; two minute setae closely associated with the alveolus of the post-spiracular seta on segments II-VIII

(Pl. 5, fig. 28) and usually the lateral seta (b). This last seta, short and frequently spiniform, is found on segments II-VIII lying on the mediad side of the post-spiracular seta ; it is often close to the alveolus of this latter seta and with it submarginal to the marginal row of tergal setae. In some species or on some segments it may appear as part of the tergal row except for being shorter and may not be readily distinguishable ; in other species it may become confused with the anterior tergal setae. However, when the post-spiracular seta appears to change its position this associated lateral seta changes with it, suggesting that it has some developmental and functional connection. The two minute associated setae are useful in identifying the post-spiracular seta ; thus their presence within the alveolus of the trichobothria (Pl. 5, fig. 29), found on segments II-IV (Text-fig. 4) in most genera of the Boopidae, shows that these are modified post-spiracular setae. The only Amblycera in which these two minute setae appear to be absent are in some species of *Gliricola*, being replaced by a single circular, presumably sensory, area without a seta. This is similar in appearance to the circular sensillum associated with the post-spiracular seta in many Philopteridae (Clay, 1954). In *Haematomyzus* the sensillum is not associated with a seta but is in the form of a papilla-like structure lying immediately below the spiracle (Pl. 5, fig. 30). In the majority of the Menoponid genera the post-spiracular seta is the outermost seta each end of the tergite, but sometimes on one or more segments there is a small seta (d) laterad to the post-spiracular seta, its presence being constant and serving as a useful generic



FIGS 3–5. Dorsal view of part of metathorax and anterior abdominal segments, somewhat diagramatic. 3, *Eidmanniella* sp. 4, *Heterodoxus* sp. 5, *Paraheterodoxus* sp. a, anterior tergal seta ; b, lateral seta associated with post-spiracular seta ; c, post-spiracular seta ; d & e, ' pleural ' setae ; o, outermost metanotal seta.

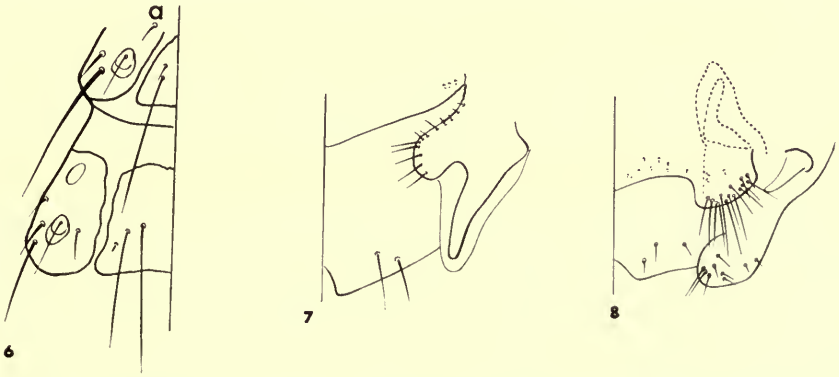
character (Clay, 1969). However, this is not a new seta but is one usually found on the lateral plate, which in some segments of some species is on the tergite. In *Eidmanniella* (Text-fig. 3), for instance, on the metapleurite there is a short spiniform seta with a longer one on its outer side ; on segments I and II there is a spiniform seta laterad to the post-spiracular seta on the tergite and the inner seta (e) on the lateral plate is no longer spiniform but is similar to the longer seta on the metapleurite ; on segment III the spiniform seta is once more on the lateral plate. In other genera the spiniform seta may disappear and not be found on the lateral plates of the posterior segments. The explanation of the differing position of this seta will be discussed below.

There are no spiracles on segments I–II in any of the Phthiraptera, but in the Menoponidae there is a seta, usually elongate each end of tergites I–II, that on II having the two minute associated setae, suggesting that functional spiracles were at one time associated with these setae. The spiracles may open on the tergites (most of the Menoponidae, *Heterodoxus*), or the lateral plates (*Boopia*, Trimenoponidae and Gyropidae) or on the mediad part of a partially divided lateral plate (*Paraheterodoxus*). In the *Colpocephalum* species parasitic on the Phoenicopteridae, as shown by Price (1965 : 128), and in some species of *Myrsidea* the spiracles of the female open on the lateral plates ; while those of the male open on the tergite, the usual position in the Menoponidae. In both sexes the post-spiracular setal complex is on the tergite. In species belonging to the Boopidae, Trimenoponidae and Gyropidae the post-spiracular complex follows the spiracles, both occuring on the same abdominal plate. It is interesting from the taxonomic point of view to consider the significance of the apparent change of position of the spiracles. In a typical Menoponid the metanotum is separated each side by a narrow suture from the pleural epimeron (Mayer, 1954), the suture being apparent from the dorsal surface owing to the flattened nature of the body. The first abdominal segment shows a similar condition, with the chaetotaxy of the lateral edge of the tergal plate and that of the lateral plate being similar to that of the metanotum and metapleurite ; this suggests that the lateral plate of segment I in the Menoponidae is also pleural. Segments II–VIII are similar in this respect, with the spiracles (on III–VIII) and post-spiracular setal complex lying near the lateral edge of the tergite. However, an examination of the nymphs shows that the arrangement of the abdominal plates during development is different.

In *Eidmanniella* sp. n. (Ryan & Price, in press) of which all three nymphal stages are available, the different instars, in addition to size differences, can be recognized as follows : first instar, tergite VIII with four setae and sternites II–VIII each with four setae ; second instar, tergite VIII with six setae and sternites II–VIII with full rows of setae ; third instar, tergite VIII with 11–12 setae and sternites with full rows of setae and incipient lateral brushes on some sternites. It is not possible to identify the abdominal plates in the available material of the first instar. In the second instar each segment has a central tergal plate separated at each end by an unhardened area from a lateral plate (Text-fig. 1) ; this latter plate bears the post-spiracular complex together with the usual marginal setae found on the lateral (or pleural) plate and the spiracles on segments III–VIII. In the third instar (Text-fig.

2) the lateral plate is divided or partly divided into two by a vertical suture which separates the post-spiracular complex, and the spiracle if present, from the rest of the lateral setae. In some specimens of second instar nymphs there is an indication of a narrow suture where the wider gap is found in the third instar. In those species in which the adult has a seta laterad to the post-spiracular seta on some segments, differentiation of the suture takes place either on one side of this seta so that it lies on the same plate as the post-spiracular seta, or on the other side so that it is with the rest of the lateral seta (Text-fig. 2). When in the adult this small plate bearing the post-spiracular complex merges with the central tergal plate by the hardening of the intervening area, only a lateral plate, appearing similar in position and chaetotaxy to the metapleurite, and perhaps also pleural, is left.

Within the family Boopidae there is variation in the adult arrangement of the abdominal sclerites. The setae which are useful landmarks are the same as those found in the Menoponidae, comprising the post-spiracular complex, seta b, and the lateral setae d and e. Seta d usually lies somewhat anterior to the longer seta e and as in the Menoponidae may be absent on the posterior segments. In adults of the species of *Boopia* and in those nymphs available for study, there is a single lateral plate on each segment bearing the post-spiracular complex, the spiracles when present, the two lateral setae d and e and sometimes other setae usually designated as pleural. This lateral plate is similar to that found in second instar Menoponidae. Third instar nymphs and adults of *Paraheterodoxus* resemble third instar Menoponidae in having a partially subdivided lateral plate. In both *Paraheterodoxus* and some Menoponid nymphs the apparent division of the lateral plate is conspicuous by transmitted light, but the SEM shows it to be a complete plate with only a line of slight unevenness (Pl. 5, figs 27, 28). This lack of surface differentiation probably means that the outer region of the cuticle is almost, if not completely, uniformly sclerotized ; the suture shown with transmitted light is probably due to lack of sclerotization in the lower regions of the cuticle. Dr B. K. Tandan has suggested that a small portion of the cuticle thus becomes less rigid than the adjoining areas and is capable of folding or distortion ; it is probably this



Figs 6–8. 6, *Boopia* sp. Dorsal view of abdominal segments II and III. 7–8. Female terminalia. 7, *Damalinia ovis*. 8, *Goniodes assimilis*.

distortion which has made the surface of the plate slightly but definitely uneven. In the adult Menoponid the suture becomes complete, dividing the lateral plate in two, one half of which merges with the central tergal plate, while in *Paraheterodoxus* the nymphal stage persists. Nymphs and adults of *Heterodoxus* resemble those of the Menoponidae. Thus, within the family Boopidae there are three arrangements of the lateral and tergal plates all of which are found during the ontogeny of the Menoponidae. A study of the available material shows that third instar nymphs and adults of *Trimenopon* and adults of other Trimenoponidae and the Gyropidae resemble second instar Menoponid nymphs in having the single lateral plate bearing the spiracles, the post-spiracular complex and other setae usually considered pleural. In *Boopia* and the Trimenoponidae the lateral plates lie dorsal, in the Gyropinae dorsal, lateral or ventral and in the Gliricolinae ventral.

It is apparent from the foregoing that there are not only differences in the arrangement of the abdominal sclerites between nymphs and adults of the same species but also between families and within one family, between genera. Further, although the position of the spiracles and post-spiracular complex appears to differ, they are morphologically in the same position ; the apparent differences being due to where the differentiation of the suture takes place and whether the unhardened area between laterotergite and tergite becomes hardened or that between laterotergite and ' pleurite '. These processes are perhaps not very fundamental or phylogenetically permanent. *Boopia* (*Phacogalia*) *brevispinosus*, for instance, shows further divisions of the tergal plate so that the adult has segments with six abdominal plates : three tergal, two lateral and one sternal.

It is difficult to give a satisfactory name to the lateral plate which may have some pleural elements but as it bears the spiracles, either in the nymph or adult, must also have tergal elements. As Snodgrass (1935 : 71) has said ' sclerites do not define anatomical areas ' and the flattened condition of the Mallophaga make it difficult to identify the dorso-pleural and pleuro-ventral lines. It is possible that the true pleuron is largely represented by the unhardened area usually present between the sternite and lateral plate and that the lateral plate is either entirely tergal or has a pleural sclerite which is sometimes free and sometimes fused with a laterotergite ; Mayer, 1954 has shown that part of the pleuron of the prothorax in the Menoponidae is incorporated in the pronotum. Taking all these points into consideration the name *lateral plate* is perhaps the most satisfactory for a plate which may perhaps sometimes be pleural (e.g. Menoponid adults), tergopleural (e.g. Menoponid nymphs, *Boopia* adults) or entirely laterotergal, if it is believed that it contains no pleural elements.

8. *Female Gonapophyses*. This name has been used for various structures found in some of the Phthirapterous groups, but it is doubtful whether they are homologous throughout the order. Kéler (in press) describing the gonapophyses of the Boopidae as sickle-shaped bluntly or sharply pointed appendages, shows that the anal margin extends into the inner wall of these structures. It seems therefore that the setae-bearing appendage each side of the anus in *Chapinia* (Menoponidae) may be homologous with the gonapophyses of the Boopidae. In the Trichodectidae, according to Kéler (1938), the structures referred to as gonapophyses are of a different origin

and were named by him ' copulatory valves ', He shows that their margins merge directly with the wall of the genital chamber (Text-fig. 7). The structures in the Anoplura called ' gonapophyses ' by Ferris (1951) are the same, being continuous with the vulval margin. Ferris (1951 : 30) considered that the tufts of setae or lobes each side of segment IX in the Anoplura represented the gonapophyses of that segment. It seems probable that the setiferous lobes continuous with the lateral margins of the vulva (Text-fig. 8) in some species of *Goniodes* (Philopteridae) are homologous with the copulatory valves of Trichodectidae. The various lobes and processes on the venter of the posterior segments in the Philopterid genera *Goniodes*, *Rallicola*, *Wilsoniella* and *Osculotes* may be vestiges of gonapophyses as described by Ferris for the Anoplura. The structures in *Haematomyzus* called ' gonapophyses ' (Ferris, 1931 : 124) are rather difficult to interpret, but also appear to be the copulatory valves of Kéler as found in the Anoplura and Trichodectidae. There seems to be a tendency in the lice parasitic on mammals to retain gonapophyses or to develop gonapophyses-like structures ; these possibly being used in attaching the egg to a hair. Murray (1967 : 21) found that *Damalinia* utilized the copulatory valves during egg-laying. If this view of the different origin of the ' gonapophyses ' in the Amblycera on one side and in the Anoplura and Ischnocera on the other is correct, it supports other evidence used for dividing the Phthiraptera taxonomically into these two groups.

9. *Tracheal System.* A posterior commissure joining the two main abdominal trunks, believed to be a primitive character, has been demonstrated in the Anoplura, *Haematomyzus*, Boopidae, *Trimenopon*, some of the Trichodectidae and in *Nesiotinus* (Philopteridae) by Harrison, 1915 and Ferris, 1931.

Piagetiella (Menoponidae) has a transverse commissure in the fourth abdominal segment ; a character, according to Harrison (1915), probably directly associated with its habitat in the gular pouch of the host. The form of the tracheal system may therefore be partly ecological and partly phylogenetic. Harrison, 1915 demonstrated two head commissures in *Gyropus ovalis* and *Gliricola porcelli*. However, apart from the number and position of the spiracles already discussed, too little is known concerning the respiratory system of most forms to make any use of it in taxonomy.

DEFINITION OF AMBLYCERA AND INCLUDED FAMILIES

AMBLYCERA

Antenna four- or five-segmented, third segment pedunculate ; total of two to four sensilla coeloconica on fourth and fifth segments. Mandibles with articulations dorsal and ventral : filiform maxillary palpus. Tentorium complete with exception of dorsal arms ; presence of a muscle homologous with ligament of Denis in those forms examined by Symmons, 1952 : 373. At least one pair of post-spiracular setae with two minute adjacent setae, rarely absent and replaced by a single circular sensillum. Crop a simple enlargement between oesophagus and midgut, with crop teeth at its posterior end ; the figures of the crop of *Trinoton* in Blagoveshtschensky

(1949, pl. 1, figs 1–3) however suggest that there may be a small diverticulum at each end of the crop. The testis of the Amblycera usually consists of three follicles but Blagoveshtschensky (1956) found only two in the three species of *Myrsidea* he examined ; this is also the case in *Myrsidea* sp. from *Gymnorhina dorsalis*.

MENOPONIDAE Mjöberg, 1910

1. Antenna four- or five-segmented. 2. Two sensilla coeloconica : one on each of segments four and five in the five-segmented antenna and both on the last segment in the four-segmented antenna. 3. Labial palpi present. 4. Five distal setae on labial palpus. 5. Maxillary palpus four-segmented. 6. Head chaetotaxy conforms to certain patterns (Clay, 1969). 7. Pro-, meso- and metanotum separate. 8. Coxa I elongated antero-posteriorly. 9. Legs II and III with two tarsal claws. 10. Tergum I not fused with metanotum and normally developed, at least in males. 11. Six pairs of spiracles, present on abdominal segments III-VIII. 12. Post-spiracular setal complex each end of central tergites.

In addition the following are characteristic of most of the Menoponidae, although not present in all genera : a. Two subterminal setae on last segment of maxillary palpus, one of which is usually peg-like. b. Two of the dorsal submarginal setae (26 and 27) on temples with the alveoli contiguous. c. Subocular comb row. d. Transverse prontotal carina. e. Typical oblong well-sclerotized postnotum. f. Females with typical anal corona of setae.

BOOPIDAE Mjöberg, 1910

The Boopidae agree with the Menoponidae in characters 1, 2, 3, 6–9, 11. There may be four or five distal setae on the labial palpus (4) ; the number of segments in the maxillary palpus is usually four but may be reduced to two or three (5) ; the spiracles and the post-spiracular complex may be on the central tergites or the lateral plates (12). Tergum I is always fused with the metanotum (10). Members of this family also agree with the Menoponidae in characters a, d, e and sometimes c, and except for the genera *Paraboopia* and *Latumcephalum*, all agree with b. One character common to all the Boopidae and apparently not found elsewhere in the Amblycera is the presence of a seta, usually spiniform, borne on a protuberance each side of the mesonotum (Pl. 5, fig. 26, s). This character together with the fusion of tergum I with the metanotum and the presence of gonapophyses of a distinctive form separates the members of the Boopidae from the Menoponidae. As shown above Harrison demonstrated in some species of the Boopidae a posterior abdominal tracheal commissure not found as yet in any of the Menoponidae. Symmons (1952) showed that *Heterodoxus* differed from the majority of the Menoponidae in the non-sclerotization of the posterior part of the anterior arms and by the reduction of the bridge to a ligament. Harrison & Johnston (1916 : 339) considered that the main characters separating the Boopidae from all other known Mallophaga was the ' large accessory sac associated with the male genitalia '. However, Kéler (in press) has shown that this is the spermatophore, a structure also found in some of the Menoponidae (Clay, 1968).

Paraboopia and *Latumcephalum* resemble each other and differ from the rest of the Boopidae in having a reduction in the number of segments of the maxillary palpus, a somewhat atypical pattern of head setae and with setae 26 and 27 not contiguous ; post-spiracular setae of segments II-IV not modified as trichobothria and a reduction in the length of the tarsus in *Latumcephalum.* Kéler (in press) considered this last character to be transitional between the condition in the Boopidae and the Trimenoponidae. In both genera the last segment of the antenna is greatly reduced but the line of division between four and five can be seen and the two sensilla coeloconica lie one each side of this line. As in *Boopia* the spiracles open on the lateral plates. Although some of these characters are also found in the New World mammal-infesting Amblycera it does not follow that the two genera are intermediate between these New World groups and the rest of the Boopidae. The characters are not of the kind which necessarily denote relationships (see discussion below) and some of them are also found in the Menoponidae. Further, *Paraboopia* and *Latumcephalum* have the majority of the characters listed above for the Boopidae and in addition the male genitalia, gonapophyses and the presence of spermatophores are all typical of that family.

LAEMOBOTHRIIDAE Mjöberg, 1910

The Laemobothriidae agree with the Menoponidae in characters 1, 2 (except that there are three not two sensilla coeloconica), 3–5 and 8–12. The head chaetotaxy (6) is not quite typical and the meso- and metanotum are fused (7). Characters a, d and usually b as in the Menoponidae ; the typical oblong postnotum (e) is absent and there is no typical anal corona (f).

Members of this family have the following characters in common not known elsewhere in the Amblycera : an area of sculpturing on the temples (Pl. 4, fig. 23) with outer rows of peg-like projections (Nelson & Price, 1965) ; venter of third femur and some sternites with patches of microtrichia of characteristic form (Pl. 4, fig. 22) ; tibiae II and III distally with terminal dorsal patch of microtrichia (Pl. 4, fig. 24) and an anterior patch of smaller microtrichia ; the mentum (*sensu* Symmons, 1952, fig. 18) with bladder-like lobe, conspicuous in untreated specimens.

RICINIDAE Neumann, 1890

The Ricinidae agree with the Menoponidae in characters 1, 2, 5, 8, 9, 11 and 12. There are no labial palpi (3, 4) ; the head chaetotaxy is atypical (6) and tergum I is fused with the pteronotum. The family has none of the characters a–f. They are distinguished from all other Amblycera by the absence of labial palpi ; presence of a conspicuous flap-like protrusion (pulvinus) attached each side to two horizontal sclerites of the labrum ; and in having the meso- and metanotum and the first abdominal tergum fused together with a continuous lateral buttress of internal tergal thickening each side. They also show reduction and modification of the mouthparts (Clay, 1949).

In published descriptions and keys the Ricinidae and Laemobothriidae have been separated from the Menoponidae by the position of the antennal fossae which are said to be ventral on the head, not lateral. In fact, a number of the Menoponidae genera have the antennal fossae located entirely on the ventral surface of the head. There is a superficial resemblance in the shape of head, thorax and abdomen in some of the Ricinidae and the Laemobothriidae that has suggested a relationship between the two families (Hopkins, 1942 : 105). However, there is considerable difference in head and body shape within the Ricinidae, for instance between *Ricinus* and *Trochiloectes*. Symmons (1952) considered that the form of the tentorium suggested a relationship between the two families, but it has been shown (under tentorium above) that this is not necessarily so. Perhaps the greatest point of similarity is the form of the lateral margins of the abdomen and the elongated internal buttresses of tergal thickening in the Laemobothriidae and some of the Ricinidae. This may be, however, a method of solving the problem of strengthening the elongated abdomen ; an internal thickened buttress is also present in some of the elongated Philopteridae (Ischnocera) parasitic on the Procellariiformes.

TRIMENOPONIDAE Harrison, 1915

The Trimenoponidae agree with the Menoponidae only in characters 1, 3, 9 and usually 5. The four sensilla (2) open to the exterior in a single cavity on the terminal segment of the four segmented antenna ; the labial palpus has 4 distal setae (4) ; the maxillary palpus is four to five-segmented (5). The fusion of the thoracic nota varies (7), tergum I is always reduced both antero-posteriorly and from side to side (10) and there are five pairs of abdominal spiracles (11) which open on lateral plates III–VII (12). Characters 2, 4, 6, 8, 11, 12, a, b, c and f are not as found in the Menoponidae ; d and e may be present or absent.

The Trimenoponidae (*sensu* Hopkins & Clay, 1952 : 12 and including *Chinchillophaga* Emerson, 1964 and *Hoplomyophilus* Mendez, 1967) contains a number of genera with rather diverse characters especially in the degree of fusion of the thoracic segments and the features of the head. The distinctive features of the Trimenoponidae are the character of tergum I and the reduction or absence of pleurite I. These characters, together with the presence of the two-clawed tarsus and the five pairs of abdominal spiracles, separate the members of this family from the rest of the Amblycera. They resemble the rest of the New World mammal-infesting Amblycera in having the abdominal spiracles and the post-spiracular setae on the lateral plates and in the form of the antennal sense organ.

GYROPIDAE Kellogg, 1896

The Gyropidae as a whole agree with the Menoponidae only in characters 1 and 3, although some of the Menoponid characters are found in certain of the genera. The family comprises three main groups which resemble each other in the general characters of the mouthparts ; general chaetotaxy of the head and abdomen ; the antenna and the antennal sensilla ; reduction of the sclerotization of the tentorium ; two head commissures in the tracheal system (based on two species only) ; spiracles and post-spiracular setal complex on the lateral plates ; legs II and III with a single tarsal claw and in all but one genus, extreme modification of at least one pair of legs to form an organ for clasping the hair. This modification of the leg has been achieved on quite different lines in the two main groups of the Gyropidae and has probably developed independently ; the two groups also differ in the number of abdominal spiracles, one resembling the Trimenoponidae in having none on segment VIII. Although it is possible that the Gyropidae are polyphyletic, for the present they are best kept in one family using Ewing's subfamilies to show the differences.

PROTOGYROPINAE Ewing, 1924. This subfamily, represented by a single genus, agrees with the Menoponidae in characters 1, 3, 11 and d. The antennal sense organ is type c (2) ; labial palpus with four distal setae (4) ; maxillary palpus three-segmented (5) ; meso- and metanotum fused (7) ; all legs with one simple claw (9) ; tergum I fused with pteronotum (10).

GYROPINAE Ewing, 1924. This subfamily agrees with the Menoponidae in characters 1, 3, 11 and d ,and also with 4, 5, 7, 10, and e in some species. The antennal sense organ varies as described above (2) ; the labial palpus has four or five distal setae (4) ; fusion of meso- and metanotum varies (7) ; development and fusion of tergum I varies (10) ; the spiracles and post-spiracular setal complex on the lateral plates. Although Werneck (1936 : 419) in his diagnosis of *Gyropus* states that the maxillary palpus (5) has four segments, *Gyropus ovalis* has only three.

GLIRICOLINAE Ewing, 1924. This subfamily is the most unlike the Menoponidae, resembling them only in characters 1, 3, d, and sometimes 5 and e. Labial palpus with not more than three distal setae (4) ; maxillary palpus two- or four-segmented (5) ; legs II–III with single modified tarsal claw (9) ; five pairs of abdominal spiracles (11) opening on lateral plates III–VII (12).

THE SUPRAGENERIC CLASSIFICATION OF THE AMBLYCERA

There is no agreed suprageneric classification within the Amblycera ; it varies with different workers. Harrison (1915 : 124) considered that the Trimenoponidae and the Boopidae showed only a superficial resemblance to each other and believed (1922 : 154, repeated in 1926 : 1585) that the Boopidae were most nearly related to the Gyropidae, but no reasons were given. In his description of a new genus (*Acanthomenopon = Cummingsia*), Harrison (1922 : 154) stated that it must be placed in the Trimenoponidae, but it showed some marked features of resemblance to the Boopidae, and some points of contact with the Gyropidae ; these features were not enumerated. Harrison believed that all the mammal Amblycera were monophyletic and originated on the marsupials. Ewing (1929 : 96) considered that the boopids were near the menoponids, recognizing the Boopinae and the Menoponinae as two subfamilies of the Menoponidae. Werneck (1948 : 5–6, as quoted by Vanzolini & Guimarães, 1955 : 23–24) considered, apart from the Gyropidae, that the division of the Amblycera should be : i) trimenoponids ; ii) menoponids and boopids ; iii) ricinids. Hopkins (1947 : 537) considered that the Trimenoponidae showed no evidence of any close relationship with the Gyropidae, but were quite closely related to the Boopidae ; he gave no reason for this.

In considering the relationships neither the retention of a primitive character nor the complete loss of a character necessarily denotes relationship, as in either case this can happen independantly. However, the presence of an identical derived character does suggest a common ancestor for the forms which show it. A character, if complex, once lost is probably not developed again in the same form so that a species with such a character is probably not descended from a stock which has lost it. A character which shows much variation within related groups of species cannot generally be used to infer relationships between less similar groups ; in the Amblycera such characters are the degree of development of the hypopharynx, development of the ommatidia, the fusion of the thoracic segments and the arrangement of the abdominal sclerites. Using these criteria the possible relationships within the Amblycera are discussed.

It is unlikely that the pedunculate third antennal segment, similar throughout the Amblycera, was developed more than once. If so it was present in the ancestral form and is evidence that the Amblycera are monophyletic. Other characters (Table I A, a) probably found in the proto-amblyceran were : a five-segmented antenna with a sensillum coeloconicum on segments four and five ; labial palpi ; a four-segmented maxillary palpus ; an eye formed of two ommatidia ; a tentorium, fully developed except for the dorsal arms ; a thorax with three separate segments ; abdominal segment I fully developed and free ; two tarsal claws ; a transverse pronotal carina ; an oblong strongly sclerotized postnotum ; six pairs of abdominal spiracles opening on segments III–VIII ; at least one pair of gonapophyses and a testis formed of three follicles. It is difficult to conjecture the form of the lateral plates in the ancestral amblyceran as there are differences between adults and between adults and nymphs of the same species. In Table I only the condition found in adult Menoponidae is used ; this is considered as a proto-menoponid character as it is found in those families most similar to the Menoponidae.

The loss or modification of some of these characters can be used to differentiate the families, but sometimes they are also variable within families. Table 1 shows that the Menoponidae (8A + 3a) and the Boopidae (8A + 2a) have retained more of these proto-amblyceran characters (the A-group) than the other families. By the arguments already used the retention of supposedly ancestral characters does not necessarily denote a relationship between the two families. However, they both possess certain derived characters (Mm) possibly already present in the proto-menoponid ; this together with the fact that there are no distinctive derived characters separating the two groups, indicates that they may be relatively closely related. The position is perhaps best represented by Ewing (1929 : 26) who divided the Menoponidae into the Boopinae and Menoponinae. This change is not adopted here as it would be better considered as part of a revision of the family-group classification of the Amblycera as a whole. A resemblance between certain characters found in *Paraboopia* and *Latumcephalum* (Boopidae) and those of some of the New World mammal-infesting Amblycera has been discussed under the diagnoses of the families. As the two genera are fundamentally boopid in character it would seem that any resemblance to the S. American mammal-infesting forms is likely to be the result of convergent adaptation of an avian-infesting menoponid stock to a mammalian environment; while many of their other features are directly derived from that ancestral stock.

The Laemobothriidae (8A) and the Ricinidae (5A) differ from the Menoponidae not only in the loss and modification of some of the A-group characters, but in the development of further differentiating characters as given in the diagnoses of the families. However, as shown by the M-group characters, the difference especially in the Laemobothriidae, are not very marked and there is little doubt that both families have arisen from a protomenoponid stock.

The remaining families and subfamilies, all parasitic on New World mammals, have fewer of the A-group characters. All have one derived character in common, the presence of four sensilla coeloconica, usually opening to the surface by a single cavity or four wide-mouthed cavities. The Gliricolinae differ most markedly from the Menoponidae in the absence or modification of the A-group characters. In addition to the form of the antennal sense organ, they have a derived character, that of the highly modified leg, as a differentiating feature. The Gyropinae are less modified than the Gliricolinae and again have characters of the leg which separate them from the Menoponidae. The presence, loss or modification of most of the A-group characters in the Trimenoponidae is similar to those in the less modified members of the Gyropidae, this not necessarily denoting relationship. However, the form of the antennal sense organ in the Trimenoponidae is so similar to that of the Gliricolinae that a relationship between them can be presumed. The loss of the spiracles on segment VIII in both Trimenoponidae and the Gliricolinae may have happened independently. The Trimenoponidae differ from the Gliricolinae in having two tarsal claws, but again this character is of doubtful use in considering relationships. There is much variation within the Gyropidae : leg I may have two tarsal claws and legs II and III one (*Macrogyropus*), all legs may have a single unmodified claw (*Protogyropus*) or at least one pair of legs may be highly modified for clasping (*Gyropus, Gliricola*). This clasping modification is so different in the Gyropinae and Gliricolinae that each type could have developed independently from the normal tarsus. The presence of one claw, as Hopkins (1949 : 391) has pointed out, is a characteristic feature of the lice of mammals, as it is of the Hippoboscidae parasitic on mammals, and does not necessarily indicate relationship.

Hopkins (1949) considered that the evidence from the present distribution of the Boopidae showed their occurrence on the Australian marsupials to be primary. Since then considerably more species of Boopidae have become known : Kéler (in press) recognizes 35 species belonging to seven genera taken from 38 species belonging to four families of marsupials. No species have been collected from the Notoryctidae (Dasyuroidea) or the Phalangeridae (Phalangeroidea), but whether this is due to absence of parasites or to lack of collecting is not at present known. The marsupials of Australasia are divided by Simpson (1945) into three superfamilies (Dasyuroidea, Perameloidea and Phalangeroidea) containing a total of six families. However, Ride (1964 : 98) has re-emphasized the inconsistency in the classification of the marsupials and the Eutheria, the former being considered as a single order although containing many forms as diverse as those comprising the Eutheria ; the latter are now subdivided into 26 orders. In spite of the Boopidae being contained in seven genera they do not, with the exception of *Latumcephalum* and *Paraboopia*, differ greatly from each other (see key below). All three groups of marsupials contain members parasitized by species of Boopidae but there is no genus, except for the doubtfully distinct *Phacogalia*, restricted to the first two superfamilies. Three genera of the Dasyuroidea (*Dasyurops*, *Dasyurinus* and *Satanellus*) are parasitized by the same species of *Boopia* (*uncinata*) and two other genera (*Phascogale* and *Antechinus*) of this superfamily each have a species (*spinosa* and *brevispinosa*) of *Phacogalia* (? = *Boopia*). Two genera (*Perameles* and *Isoodon*) of the Perameloidea are parasitized by one species of *Boopia* (*bettongia*) while the Phalangeroidea have eight species of *Boopia* and all the remaining genera and species of the Boopidae.

If a primary infestation is postulated then all the present Boopidae would be descended from a common ancestor parasitic on the ancestral stock giving rise to the three superfamilies of marsupials (X in Text-fig. 9). According to Ride (1964) these superfamilies have been separated from each other since at least early Eocene ; if this is so it would be expected that the present Boopidae would show greater diversity and that each superfamily of the marsupials would have a specific genus or genera of parasite.

If the suggestion (Hopkins, 1949) that the Trimenoponidae, parasitic on the New World marsupials and probably secondarily on New World rodents, are more closely related to the Boopidae than to any other of the Amblycera, then a common ancestor for these two would have existed in the Cretaceous. However, the morphological similarity between the Boopidae and the Menoponidae and the disimilarity between the former and the Trimenoponidae makes this theory rather unlikely. The hypothesis which seems to fit the known facts most satisfactorily is that the infestation

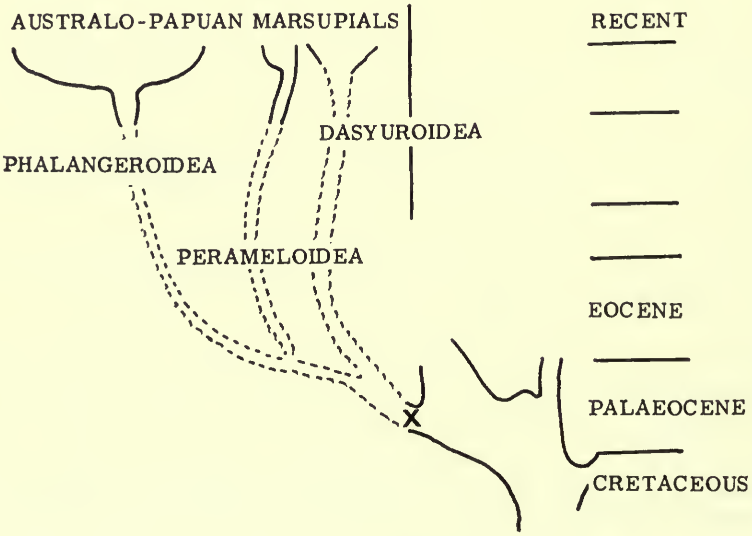


FIG. 9. A family tree of marsupials. Adapted from Ride, 1964. To agree with the text Simpson's superfamilies have been used for Ride's orders : Dasyuroidea for Marsupicarnivora ; Perameloidea for Peramelina ; Phalangeroidea for Diprotodonta.

of the Australian marsupials was comparatively late and that it arose from an avian menoponid stock, as suggested without elaboration by Ewing, 1929. This stock might have become established on an ancestral stock of Phalangeroidea, on which superfamily the diversity took place ; the parasites now found on the other two superfamilies being due to secondary infestations. The ancestral stock giving rise to the Boopidae would have had the M-group characters (Table 1) and probably most of the A-group characters now found in the Menoponidae and Boopidae. Waterhouse (1953 : 266) has shown that in *Heterodoxus* species (Boopidae) there is re-gurgitation of fluid from the midgut to the crop, a characteristic feature of the digestion of the feather-eating Menoponidae and Philopteridae, but absent in *Gliricola* and *Damalinia*, perhaps suggesting a not too distant feather-eating ancestor for *Heterodoxus*.

	V			V	V		V		V	V	V	V				V	V	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
MENOPONIDAE	d	A	A	A	A	M	A	M	A	A	A	M	M	m	m	a	a	a
BOOPIDAE	A	A	A	a-d	a	M	A	M	A	D	A	m-+	M	m	l-m	A	A	D
LAEMOBOTHRIIDAE	D	A	A	A	A	m	D	M	A	A	A	M	M	m	L	A	L	D
RICINIDAE	A	A	L	L	A	+	D	M	A	D	A	M	M	+	L	L	L	D
TRIMENOPONIDAE	D	D	A	D	a	+	a-d	+	A	A	D	+	+	+	L	a-l	a-l	D
PROTOGYROPINAE	D	D	A	D	D	+	D	+	D	D	A	+	+	+	L	A	L	D
GYROPINAE	D	D	A	a-d	a	+	a-d	+	D	a-d	A	+	+	+	L	A	a-l	D
GLIRICOLINAE	D	D	A	D	a-d	+	D	+	D	D	D	+	+	+	L	A	a-l	D

TABLE 1. Characters of the Amblyceran Families. A, Probable proto-amblyceran character in all species ; a, in most species. M, Probable proto-menoponid character (derived) in all species ; m, in most species. D, Derived character in all species ; d, in most species. L, Character absent. T, Character different. V (at top of column), Character although derived may have been acquired independently in the different groups.

1, Antenna, A, 5-segmented. 2, Sensilla coeloconica, A, 2–3 with separate surface openings; D, 4 with 1, 2 or 4 surface openings. 3, Labial palpi, A, present. 4, Labial palpus with 5 terminal setae, A. 5, Maxillary palpus, A, 4-segmented. 6, Setal pattern of head. 7, Mesonotum, A, independent. 8, Coxa I, M, antero-posteriorly extended. 9, Tarsal claws, A, 2 on legs II & III. 10, Tergum I, A, independent. 11, Abdominal spiracles, A, six pairs. 12, Position of post-spiracular setal complex, M, on central tergites. 13, Pair of subterminal setae on maxillary palp. 14, Temple setae 26 & 27 with alveoli contiguous. 15, Subocular comb-row, M, present. 16, Transverse pronotal carina, A, present. 17, Typical oblong postnotum, A, present. 18, Tentorial bridge, A, fully sclerotized.

The Trimenoponidae and Gyropidae might have been descended from a common amblyceran stock, probably avian-infesting, which became established first on the S. American marsupials giving rise to the Trimenoponidae. Perhaps part of this stock, before great divergence had taken place, became established on the New World Hystricomorph rodents, giving the Gyropidae ; secondary infestation by Trimenoponidae on this group of rodents would also have taken place. It can be postulated that the Hystricomorphs arrived in S. America without any Amblyceran parasites. This hypothesis would explain the presence of both Trimenoponidae and Gyropidae on the New World Hystricomorphs and the absence of members of both families on any of the Old World Mammals. The Gyropidae were also able to establish themselves on other mammals which entered S. America at a later date. Vanzolini and Guimarães (1955) have given a full account and discussion of the distribution of the lice of South American mammals.

Key to the Genera of the BOOPIDAE[2]

1		Post-spiracular setae on segments II-IV modified as trichobothria ; maxillary palpus 4-segmented	2
–		Post-spiracular setae on segments II-IV unmodified ; maxillary palpus 2- or 3-segmented.	6
2	(1)	Spinous process arising near base of each maxillary palpus ; spiracles on central tergal plates (Text-fig. 4)	3
–		Head without such spinous processes ; spiracles not on central tergal plates .	4
3	(2)	Abdominal lateral plates of VII & VIII broad and darkly pigmented	***MACROPOPHILA***
–		Abdominal lateral plates of VII & VIII not as above . .	***HETERODOXUS***
4	(2)	Pair of short, stout spiniform gular setae ; segments I-VIII each with pair of stout spiniform setae on tergites (Text-fig. 5) and sternites ; abdominal lateral plates partly divided by suture (Text-fig. 5) .	***PARAHETERODOXUS***
–		Without such gular setae ; segments I-VIII without such spiniform setae ; lateral plates not so divided	5
5	(4)	Head with sinus occipitalis (*sensu* Kéler in press) forming dorsal horizontal line across head immediately caudad to occipital setae (21–23) ; plantar pulvillus of tarsal claws with freely projecting point. .	***PHACOGALIA***
–		Head without sinus occipitalis ; plantar pulvillus without projecting point	***BOOPIA***
6	(1)	Maxillary palpus 2-segmented ; ocular seta on process.	***LATUMCEPHALUM***
–		Maxillary palpus 3-segmented ; ocular seta not on process .	***PARABOOPIA***

THE CLASSIFICATION OF THE PHTHIRAPTERA

It is generally accepted that the Phthiraptera are derived from a Psocopteran ancestor but there is controversy on the relationships of the groups within the order. Konigsmann, 1960 has made a wide review of the literature and given a full discussion of the characters in which the Phthiraptera resemble the Psocoptera. He considers the Phthiraptera to be a monophyletic group and not descended from more than one Psocid ancestor. Further, he has considered in detail the evidence for the view expressed by various authors (Harrison, 1928 ; Webb, 1946 and Hopkins, 1949) that the Anoplura are more nearly related to the Ischnocera than either is to the Amblycera. Konigsmann considers that the evidence supports this view and that the Phthiraptera can be divided into two main groups : the Amblycera on one side and a group A on the other ; this latter group comprises the Ischnocera, Rhynchophthirina and the Anoplura. Additional evidence strengthening this view which has emerged from the present study is the similarity of the antennal sense organs in the species belonging to group A and their difference from those of the Amblycera and the different origins of the ' gonapophyses ' in the two groups.

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[2] This is a simplified key including some of the characters used by Kéler (in press) ; this author has been followed in recognizing *Macrophila* and *Phacogalia* as genera, although it is perhaps doubtful whether this serves any useful purpose.

It seems probable that the Mallophaga (Amblycera and Ischnocera) are not monophyletic and the present nomenclature of the groups within the Phthiraptera does not therefore reflect the true state of the relationships. The most satisfactory way of amending this would be to drop the name ' Mallophaga ' and have four suborders within the Phthiraptera as follows : Amblycera, Ischnocera, Rhynchophthirina and Anoplura.

KEY TO GROUPINGS IN THE PHTHIRAPTERA

1		Third antennal segment pedunculate ; maxillary palpus present. Post-spiracular seta of at least one abdominal segment with 2 minute associated setae or rarely with single minute circular sensillum only, in which case only one tarsal claw on legs II and III . . .	**Amblycera** 2
–		Third antennal segment not pedunculate ; maxillary palpus absent. Post-spiracular setae without 2 minute associated setae	9
2	(1)	Spiracles absent on segment VIII (5 pairs)	3
–		Spiracles present on segment VIII (6 pairs)	4
3	(2)	Two tarsal claws on legs II & III	***TRIMENOPONIDAE***
–		One tarsal claw on legs II & III	***GLIRICOLINAE***
4	(2)	One tarsal claw on legs II & III	5
–		Two tarsal claws on legs II & III	6
5	(4)	At least one pair of legs strongly modified for clasping hair .	***GYROPINAE***
–		Legs not modified for clasping hair (single unmodified claw on each leg)	***PROTOGYROPINAE***
6	(4)	Labial palpi undeveloped ; labrum with hyaline extension each side (pulvinus) ; meso- and metanotum and tergum I fused together . .	***RICINIDAE***
–		Labial palpi at least one-segmented ; no pulvinus ; meso- and metanotum and tergum I not all fused together	7
7	(6)	Temples with area of sculpturing with outer rows of peg-like projections (Pl. 4, fig. 23) ; venter of 3rd femur and some sternites with patches of microtrichia of characteristic form (Pl. 4, fig. 22) ; meso- and metanotum fused	***LAEMOBOTHRIIDAE***
–		Temples without such sculpturing ; venter of 3rd femur and sternites without such patches of microtricha ; meso- and metanotum not fused . . .	8
8	(7)	Mesonotum with pair of seta-bearing protruberances ; tergum I fused to metanotum	***BOOPIDAE***
–		Mesonotum without pair of seta-bearing protuberances ; tergum I not fused to metanotum	***MENOPONIDAE***
9	(1)	Piercing mouthparts (sac containing 3 stylets) ; pronotum not apparent	**Anoplura**
–		Manibulate mouthparts ; pronotum reduced or fully developed	10
10	(9)	Mandibles borne at end of long proboscis . . .	**Rhynchophthirina**
–		Mandibles not borne at end of long proboscis	**Ischnocera**

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PLATE 1

FIG. 1. *Heterodoxus longitarsus.* Terminal segments of antenna, × 980. S, sensillum coeloconicum on 2nd segment.

FIG. 2. *Ricinus elongatus.* Terminal segments of antenna, × 933.

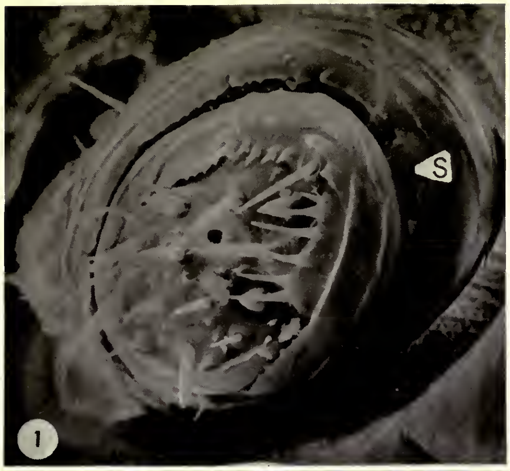
FIG. 3. *Laemobothrion (L.) vulturis.* Terminal segments of antenna, × 620.

FIG. 4. *Gryopus ovalis.* Antennal sense organ, × 3870.

FIG. 5. *Macrogyropus dicotylis.* Terminal antennal segment, × 734.

FIG. 6. *Gyropus* sp. from *Cercomys canicularis.* Terminal antennal segment, × 8400.

PLATE I



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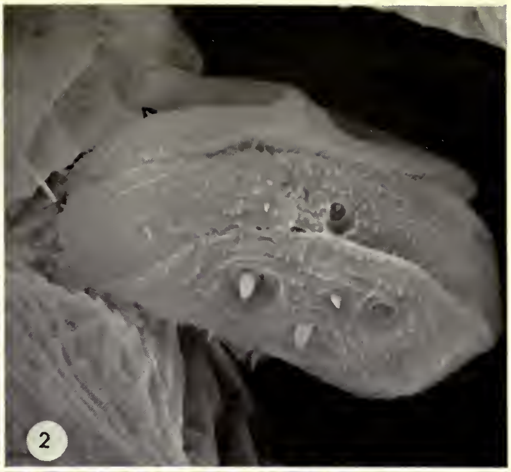

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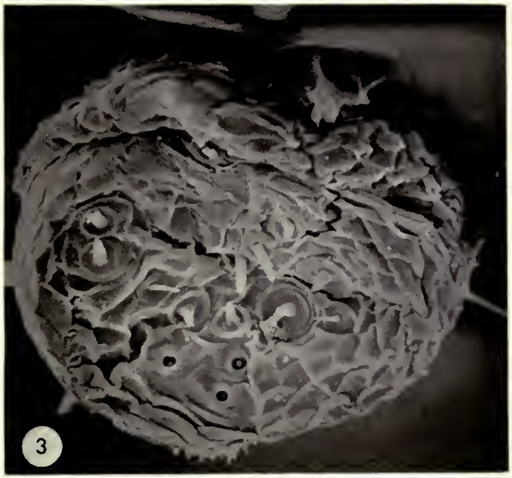

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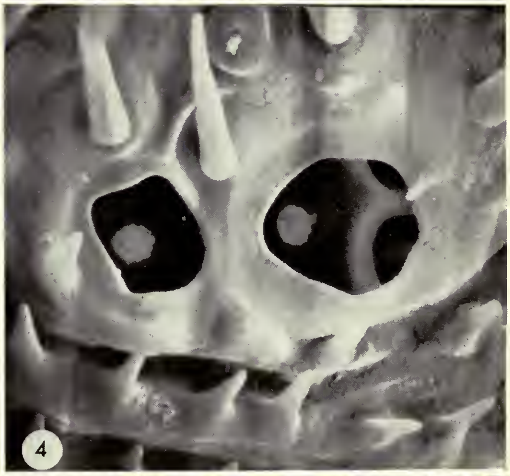

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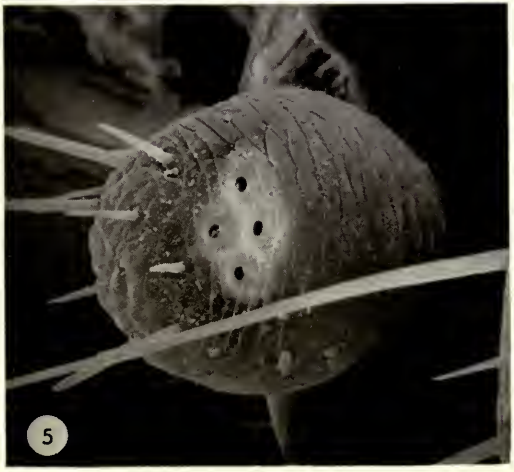

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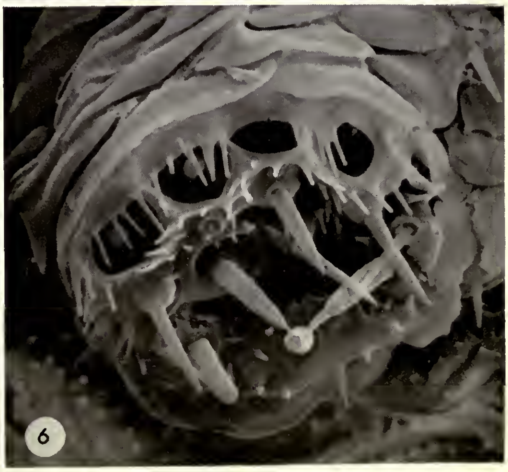

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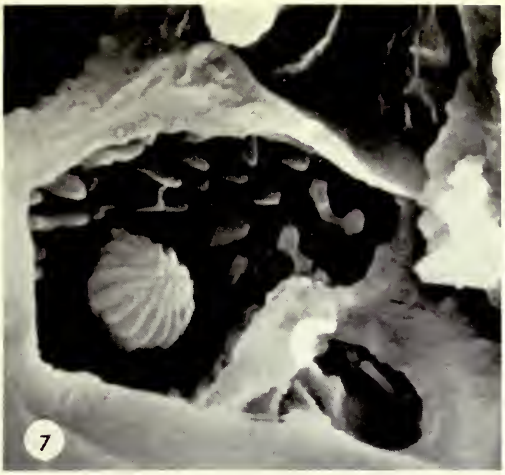
PLATE 2

Fig. 7. *Phtheiropoios wetmori.* Part of antennal sense organ, × 8334.
Fig. 8. *Macrogyropus amplexans.* Terminal segment of antenna, × 1200.
Fig. 9. *Gliricola porcelli.* Antennal sense organ, × 4934.
Fig. 10. *Cummingsia* sp. Antennal sense organ, × 3334.
Fig. 11. *Trimenopon* (*Philandesia*) *chinchillae.* Antennal sense organ, × 7334.
Fig. 12. *Trimenopon* (*T.*) *hispidum.* Antennal sense organ, × 1600.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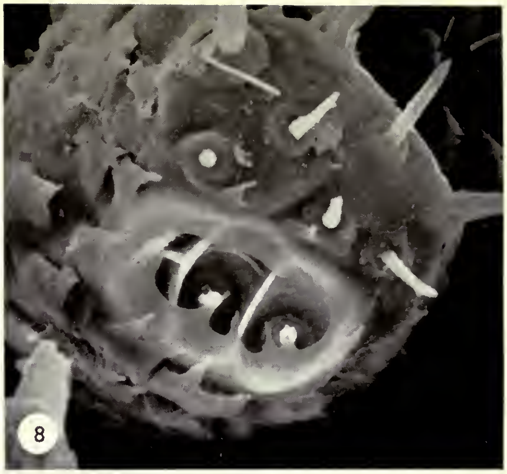
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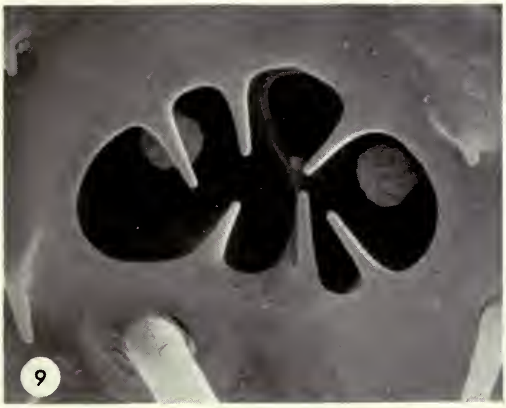
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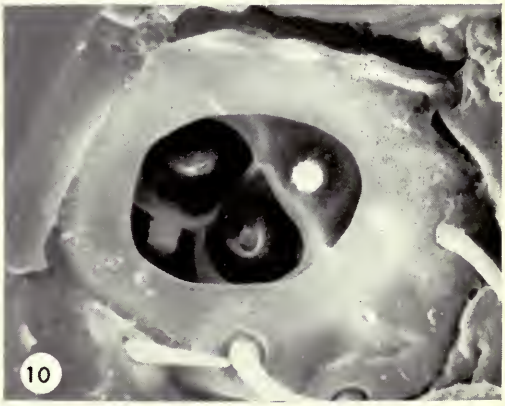
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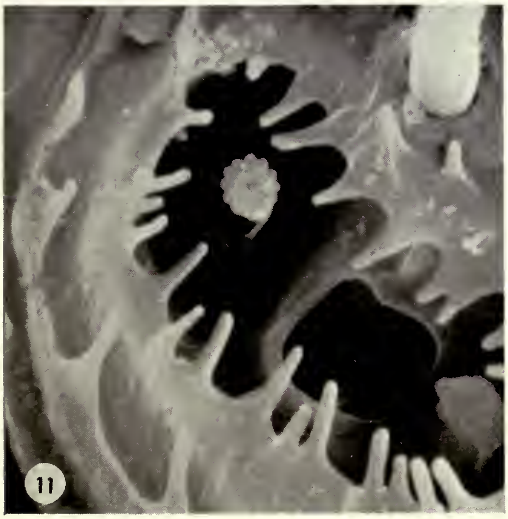
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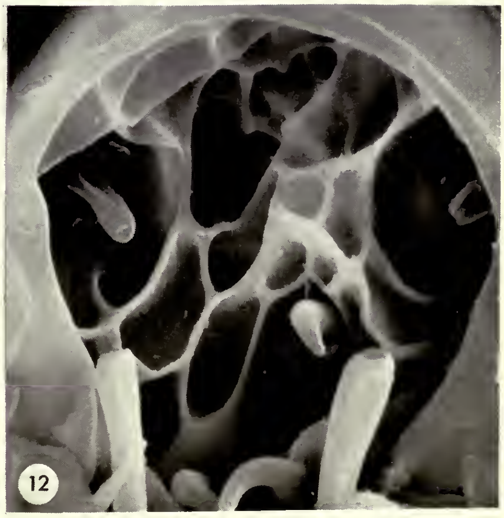
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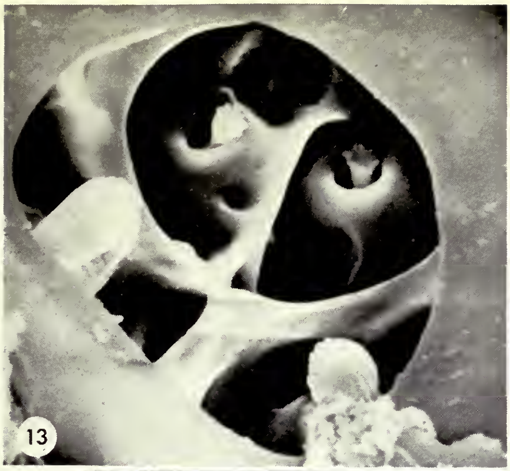
PLATE 3

FIG. 13. *Pitrufquenia coypus.* Antennal sense organ, × 5067.
FIG. 14. *Harrisonia* sp. Antennal sense organ, × 5373.
FIG. 15. *Goniodes lagopi.* 4th and 5th antennal segments, × 667.
FIG. 16. *Naubates prioni.* 4th and 5th antennal segments, × 1400.
FIG. 17. *Trichodectes melis.* Antennal sense organ on terminal segment, × 1300.
FIG. 18. *Trichodectes melis.* One of the circular areas shown in fig. 17, × 10,334.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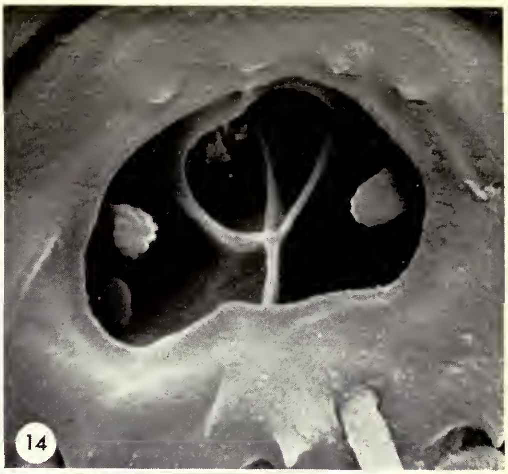
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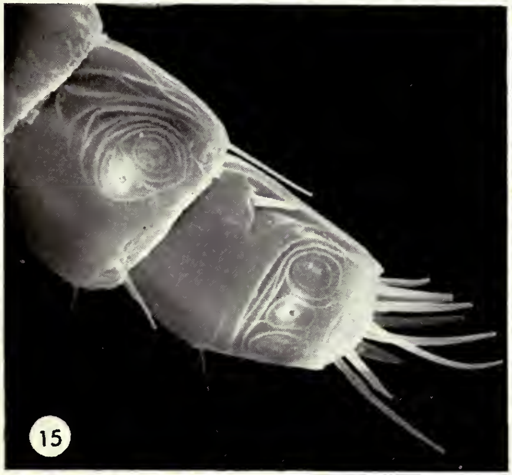
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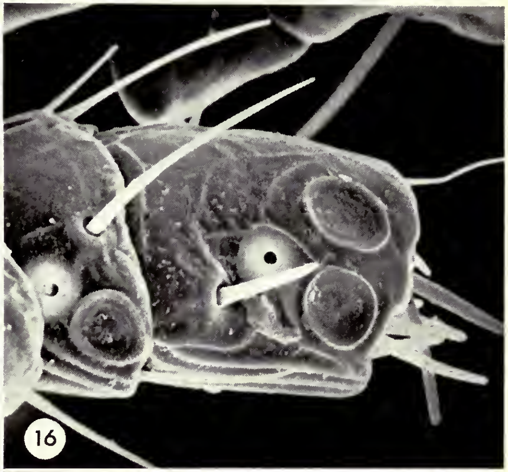
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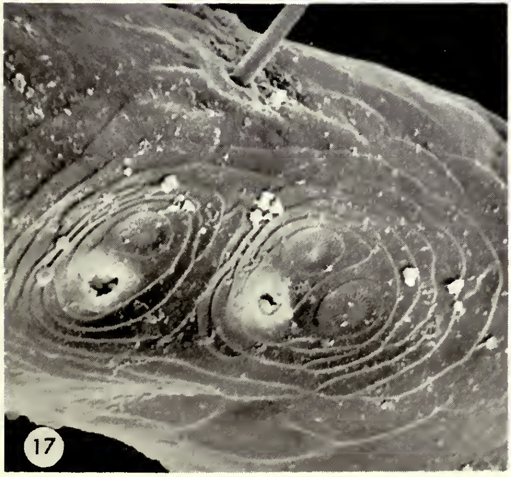
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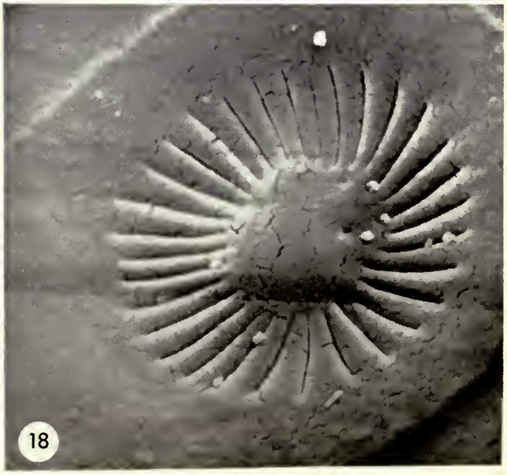
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PLATE 4

Fig. 19. *Haematomyzus elephantis.* Sense organ of 5th antennal segment, × 4667.

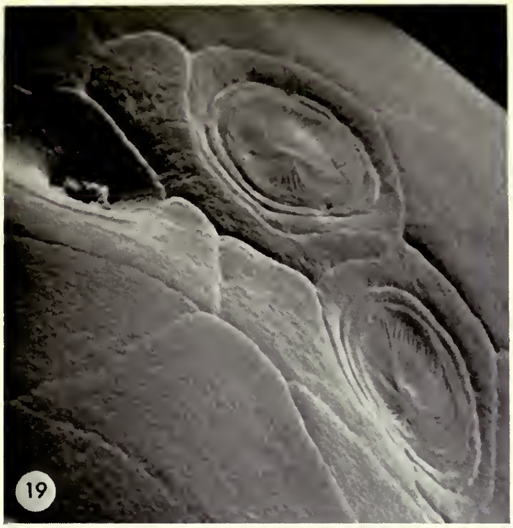
Fig. 20. *Haematomyzus elephantis.* Upper circular sense organ of fig. 19, × 9333.

Fig. 21. *Haematomyzus elephantis.* Sense peg and surrounding filaments from terminal antennal segment, × 15,334.

Fig. 22. *Laemobothrion (L.) vulturis.* Combs from abdominal sternites, × 867.

Fig. 23. *Laemobothrion (Eulaemobothrion) chloropodis.* Edge of temple, × 886.

Fig. 24. *Laemobothrion (L.) vulturis.* Distal end of tibia, × 400.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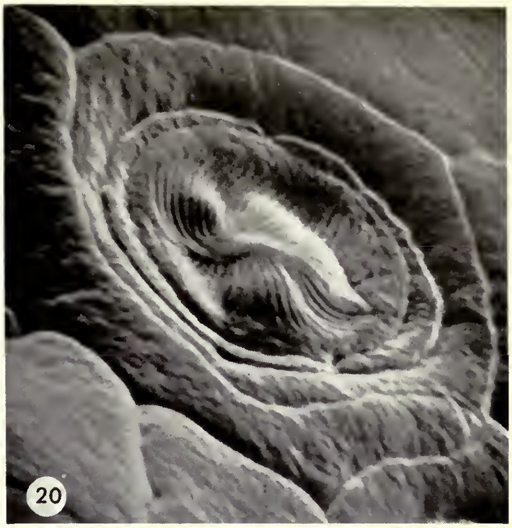
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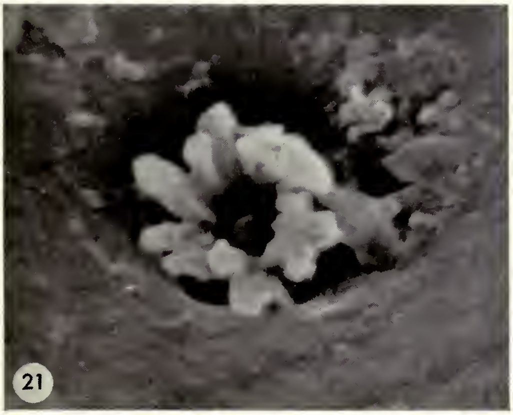
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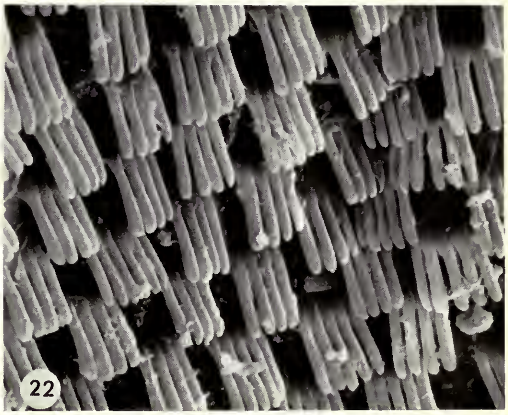
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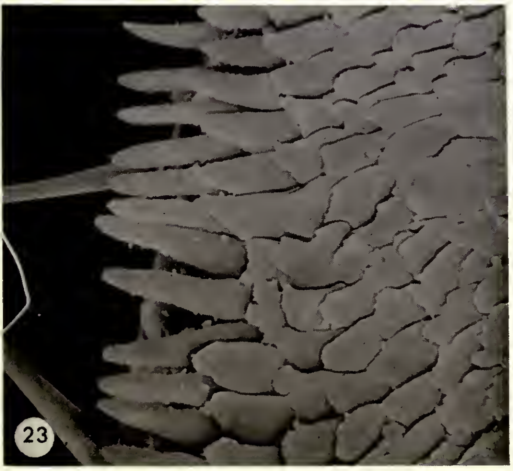
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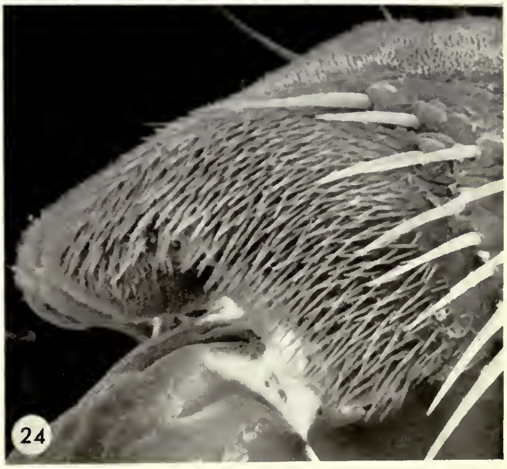
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PLATE 5

FIG. 25. *Boopia grandis.* Second tarsus of second leg, × 440.

FIG. 26. *Heterodoxus longitarus.* Meso- and metanotum and terga I and II, × 140. s, mesonotal protuberance with spiniform seta ; m, metanotum ; t, tergum I.

FIG. 27. *Paraheterodoxus insignis.* Parts of lateral plates and tergites of segments III, IV and V, × 161.

FIG. 28. *Trinoton* sp. Lateral plate of nymph, × 440 ; c, post-spiracular seta.

FIG. 29. *Heterodoxus longitarsus.* Trichobothrium of segment II showing the two minute associated setae, × 7000.

FIG. 30. *Haematomyzus elephantis.* Sense organ associated with spiracle, × 7667.

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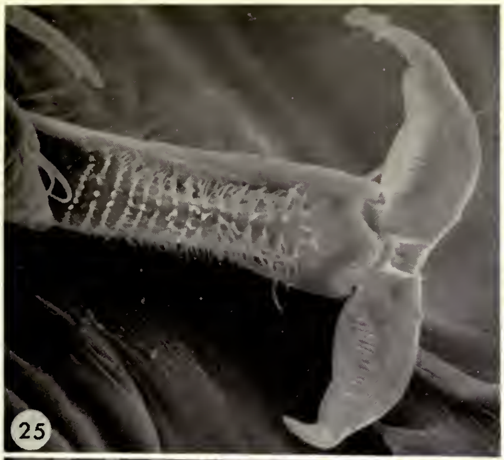
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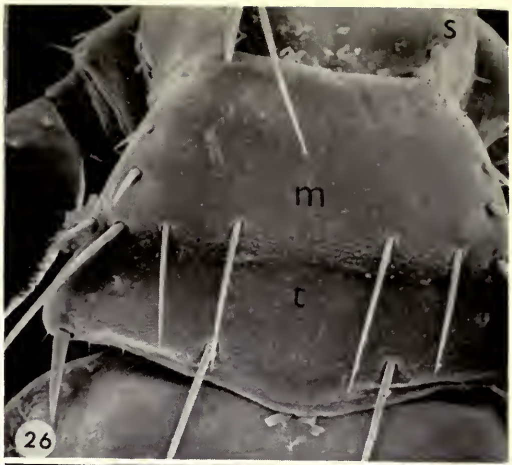
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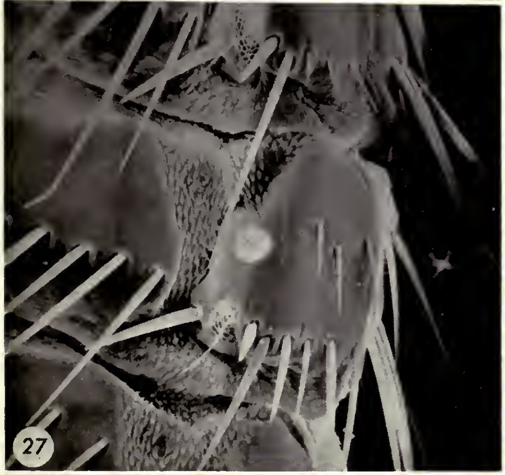
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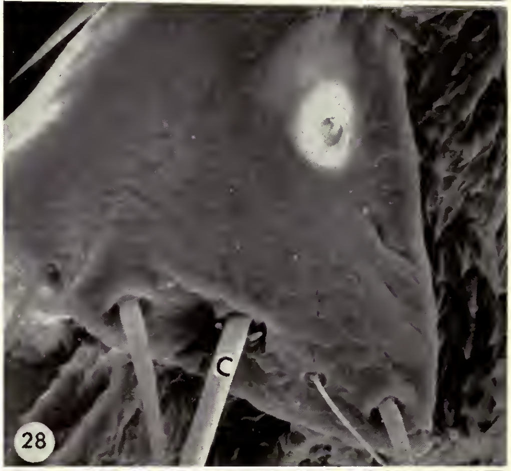
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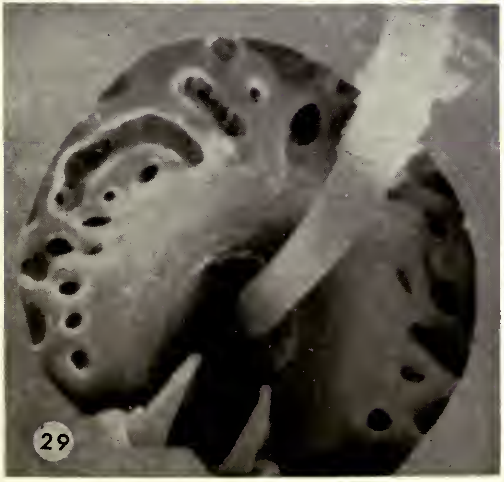
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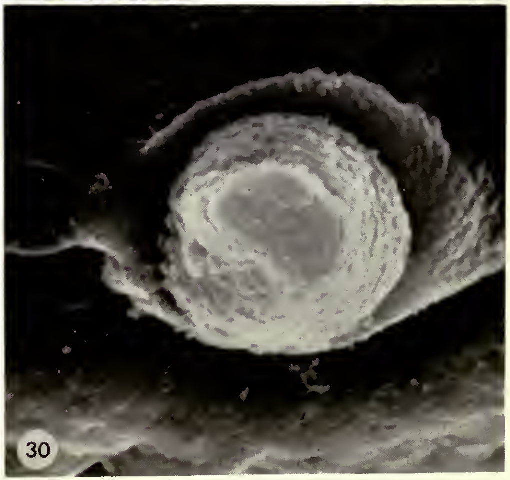
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A REVISION OF THE WORLD SPECIES OF *CHILO* ZINCKEN (LEPIDOPTERA : PYRALIDAE)

BRITISH MUSEUM
17 SEP 1970
NATURAL HISTORY

S. BLESZYNSKI

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
ENTOMOLOGY Vol. 25 No. 4
LONDON : 1970

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17 SEP 1970
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BY

STANISLAW BLESZYNSKI

Pp. 99–195; 5 *Plates*, 130 *Text-figures*

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A REVISION OF THE WORLD SPECIES OF *CHILO* ZINCKEN (LEPIDOPTERA : PYRALIDAE)

By S. BLESZYNSKI[1]

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SYNOPSIS

A revision is given of the taxonomy and distribution of the 41 species of the World *Chilo*. Five new species are described. Eight names are newly placed in synonymy, one name is extracted from synonymy, two species are transferred from specific to sub-specific rank and two new combinations of species-groups are made. A key to the species of *Chilo* is given. The taxonomic characters and generic affinities of *Chilo* are discussed. The geographical distribution of the World species of *Chilo* is analysed. The biology and economic importance of *Chilo* are briefly discussed. A list of species removed from *Chilo* is given.

INTRODUCTION

In 1961, 1963, 1964 and 1966 I was able to study and revise the *Chilo* collection at the British Museum (N.H.) as well as important material at the Naturhistorisches Museum, Vienna ; Muséum National d'Histoire Naturelle, Paris ; United States National Museum, Washington, D.C. ; American Museum of Natural History, New York, U.S.A. ; Canadian National Collection, Ottawa, Ontario, Canada ; Cornell University, Ithaca, N.Y., U.S.A. ; Zoologische Sammlung d. Bayerischen Staates, Munich ; Museum A. Koenig, Bonn ; Zoologitscheskij Institut Akademii Nauk SSSR, Leningrad ; Institut de Recherches Agronomiques et des Cultures Vivières, Paris ; Musée Royal de l'Afrique Centrale, Tervuren ; Muzeul Grigorie Antipa, Bucharest ; Commonwealth Institute of Biological Control, Kampala, Uganda ; as well as from the collection of Dr H. G. Amsel, Karlsruhe. In addition some types have been lent to me from the Institute für Spezielle Zoologie, Berlin ; Museum van Natuurlijke Historie, Leiden ; Naturhistoriska Riksmuseet, Stockholm ; and Division of Entomology of the Commonwealth Scientific and Industrial Research Organisation, Canberra, Australia. Dr H. Inoue, Fujisawa, Japan, has kindly made and sent me the microphotographs of the genitalia of the holotype of *Chilo izuensis* Okano.

---

[1] We regret to record that Dr. Bleszynski died as a result of a car accident in Germany on the 24th December, 1969, shortly after submitting this paper for publication.

ACKNOWLEDGEMENTS

I should like to acknowledge the generous co-operation ot the following workers who have helped by arranging loans of material or in other ways : Dr H. G. Amsel, Karlsruhe ; Mr T. Berberich, Bad Godesberg ; Mr L. A. Berger, Tervuren ; Mr E. W. Classey, Hampton (Middx.) ; Dr I. F. B. Common, Canberra, Australia ; Dr W. D. Duckworth, Washington, D.C., U.S.A. ; Dr W. Forster, Munich ; Prof. J. Franclemont, Ithaca, N.Y. ; Dr H. J. Hannemann, Berlin ; Dr G. P. Holland, Ottawa, Ont., Canada ; Dr H. Inoue, Fujisawa, Japan ; Dr F. Kasy, Vienna ; Dr A. B. Klots, New York, N.Y., U.S.A. ; Dr V. I. Kuznetsov, Leningrad ; Dr E. Milner, Kampala, Uganda ; Dr E. Munroe, Ottawa, Ont., Canada ; Dr M. Okano, Morioka, Japan ; Dr L. L. Pechuman, Ithaca, N.Y., U.S.A. ; Dr A. Popescue-Gorj, Bucharest ; Prof. E. Rivnay, Rechovot, Israel ; Dr U. Roesler, Bonn ; Mr M. Shaffer, London ; Dr P. L. Viette, Paris ; Mr A. Watson and Mr P. E. S. Whalley, London.

The photographic work was done by the author, except for the photographs made on the white background, which were done in the Photographic Section of the British Museum (Natural History) under the supervision of Mr M. G. Sawyers.

All text-figures were drawn by the author.

BM(NH) is an abbreviation of British Museum (Natural History), and GS-SB is an abbrevation of genitalia slide made by Stanislaw Bleszynski.

GENERIC SYNONYMY

The genus *Chilo* was erected by Zincken in 1817, for a heterogeneous cluster of species from which Duponchel, 1836, selected *Tinea phragmitella* Hbn. as the type-species. Only one of the remaining originally included species (*plejadellus* Zck.) is now considered congeneric with the type-species. Subsequently described genera, *Proceras* Bojer, *Borer* Guenée, *Diphryx* Grote, *Hypiesta* Hmps., *Nephalia* Turner, *Silveria* Dyar and *Chilotraea* Kapur are considered by the present author as junior synonyms of *Chilo*. *Proceras*, erected for one species, *sacchariphagus* from Mauritius, was for some time included in the synonyms of *Diatraea* Guilding, but was removed from synonymy by Tams, 1942. *Borer* was established for *saccharellus*, and was treated by Tams, 1942 as a synonym of *Proceras*. In fact *saccharellus* is a junior synonym of *sacchariphagus*. Until 1966, *Proceras* was considered as a distinct genus because of the reduction of the ocelli and a good deal of detail on this subject was published by Kapur, 1950. However, in 1966, the present author synonymized *Proceras* with *Chilo* on the basis of a study of the World species of this genus. *Diphryx* Grote, erected for one species *prolatella*, from Georgia, U.S.A., proved to be the same as *Chilo* and *prolatella* synonymous with *plejadellus*. *Nephalia*, described for *crypsimetalla* from Australia, was sunk under *Chilo* in 1966 by the present author. *Hypiesta*, established for one species, *argyrogramma* from Kenya, was synonymized with *Chilo* in 1965 by the present author. *Silveria* was erected for two species, *hexhex* and *adelphilia* from Mexico. Dyar selected *hexhex* as the type-species of *Silveria*. Subsequently, both species proved to be synonymous with *Chilo chiriquitensis* (Z.), and consequently the genus *Silveria* a junior synonym of *Chilo* (Bleszynski, 1962*a* : 108, 1967 : 92). In 1950, Kapur split the genus *Chilo* into two genera, *Chilo* and *Chilotraea*, based on the differences in the structure of face and in fore wing neuration. However, I regard *Chilotraea* as a synonym of *Chilo* (Bleszynski, 1962*b* : 1).

The interpretation of the genus *Chilo* has for a long time been confused, chiefly because the taxonomy has been based on the wing venation. Dyar & Heinrich, 1927, in their revision of the American species of the genus *Diatraea* and allies, based on the genitalia of both sexes, write : ' The genitalia of the Crambinae offer excellent characters for the separation of species and to some extent (especially in the males) of genera. The generic characters, however, are more in habitus than definable structural differences ; and are further obscured by the fact that in the genus *Chilo* most of the types of the other allied genera are repeated.' This opinion was quite without foundation. In fact, *Chilo* and *Diatraea* represent two of the best defined genera, on the genitalic characters, within the subfamily Crambinae. Dyar & Heinrich did not fully understand the genus *Chilo*. They put one species, *idalis* Fernald into two genera ; the female they diagnosed as *Diatraenopsis idalis* (Fernald), and the male of *idalis* they described as a new species *Chilo fernaldalis* (in fact *idalis* is a junior synonym of *Chilo demotellus* Walk.), based on the difference in the size of the ocelli, which, in fact, are variable in *idalis* (Klots, i. l.). The genus *Diatraenopsis* Dyar and Heinrich (sunk under *Epina* Walk. by Kapur, 1950) is very different from *Chilo*, as shown by the genitalia of both sexes.

The first good definition of *Chilo* was given by Kapur, 1950, but he split this genus into two genera as mentioned above. A preliminary paper on *Chilo* was published in 1962 by the present author, who transferred to *Chilo* several Ethiopian species from the genera *Argyria* Hbn. and *Diatraea* Guild. I dealt with the Palaearctic species of *Chilo* in *Microlepidoptera Palaearctica*, 1965. A discussion of the *Chilo*-complex of genera can be found in Bleszynski, 1966 : 477.

GENERIC AFFINITIES AND TAXONOMIC CHARACTERS

Chilo is very close to the American genus *Diatraea* Guild. The external appearance and general structure of the male and female genitalia are similar in both genera. *Diatraea* is restricted to North and South America, but is poorly represented in North America. *Chilo* has only four representatives in North America, and only one of these, *chiriquitensis* is found also in Central America. All the species of *Diatraea* are without ocelli, many species have well differentiated uncus (which is little modified in *Chilo*), peculiar lobes on the tegumen (absent in *Chilo*), tufts of hair on the second abdominal segment and on the hind tibia in males. Such tufts never occur in *Chilo* species. It seems that *Diatraea* is an American derivative of *Chilo* and that all the above mentioned characters of *Diatraea* are probably secondary features. It is of interest to note also that the metallic scales so often found on the fore wing in *Chilo* never occur in *Diatraea*.

The most important characters distinguishing the *Chilo*-complex from the closely allied *Acigona*-complex are : the presence of a saccus and pseudosaccus, the rather simple structure of the valva, the lack of a bridge linking the ostial pouch with the eighth tergite in the females and the undilated posterior apophyses.

Other genera of *Chilo*-complex are : *Leonardo* Blesz., *Zacatecas* Blesz., *Chilandrus* Blesz., *Myelobia* H.-S., *Chiqua* Blesz., *Malgasochilo* Blesz., *Epina* Walk. and *Japonichilo* Okano. All these genera are characterized by presence of a saccus and pseudosaccus, similar structure of the male and female genitalia, and a triple frenulum in the female. *Leonardo* (Pl. 2, fig. 3), is separated from *Chilo* by the position of M_1 in the hind wing which arises from the lower angle of cell somewhat similar to *Prionapteryx* Steph. and allies. The position of *Zacatecas* is not clear as only the female of the single species *ankasokellus* Viette is known. This species is characterized by R_2 in the fore wing which is stalked with R_3, R_4 and R_5. R_5 is always free in *Chilo*. *Chilandrus* (Pl. 4, fig. 18) is distinct from *Chilo* by the structure of the female genitalia which are peculiar in having papillae anales transformed into a triangular organ adapted to cutting the stems of the food plant. Moreover, the apex of gnathos in *Chilandrus* is rounded, being always pointed in *Chilo*. The genus *Myelobia* is restricted to the Neotropical Region. The external appearance of *Myelobia* species often resembles that of the Sphingidae. In many respects the genitalia of the species of *Myelobia* are very much like those in *Chilo* and *Diatraea* but they differ in having a very peculiarly shaped uncus. In the female genitalia the ostial pouch is usually not demarcated from the ductus bursae. The latter forms with corpus bursae an elongate bag.

The systematic position of the next two genera, viz. *Chiqua* and *Malgasochilo* is queer. *Chiqua* contains one species distributed in Peru and Bolivia. It has fully developed ocelli, convex, but rounded face, small chaetosemata, wing neuration similar to that in *Chilo* ; the hind wing pecten is peculiar as, instead of hairs, there are very long broad scales, and an additional row of such scales on the vein 1 *A* ; in the male genitalia the valva is much broader than in *Chilo* and *Diatraea*.

Malgasochilo is known only by a single male from Madagascar. Ocelli are absent, chaetosemata reduced, face not protruding beyond eye ; R_2 in the fore wing is stalked with R_3 and R_4 ; the lower part of the cell in the hind wing is long, but the upper part is much shorter than in *Chilo*. In the genitalia, the gnathos is broader than in *Chilo*, otherwise the genitalia resemble those in *Diatraea*. In general, *Malgasochilo* in the genitalia has more *Diatraea* than *Chilo* resemblance.

Eschata is an Oriental genus characterized by reduced chaetosemata, presence of ocelli, wing neuration similar to that in *Chilo*, strong pars basalis and often numerous cornuti ; female genitalia are somewhat similar to those in *Myelobia* ; externally the species of *Eschata* are very distinct by the snow-white coloration of the fore wing and two distinct transverse fasciaes.

Epina is a small American genus and *Japonichilo* is represented by one east Asiatic species ; both are similar to each other being characterized by very strong pars basalis in the male genitalia.

Ocellus in most of *Chilo* species is well developed ; chaetosemata are moderate, labial palpus porrect, usually at least three times as long as the diameter of an eye, in male shorter than female ; face round or conical, sometimes with a strong ventral ridge formed by clypeus ; antenna in male serrate ; frenulum in female triple ; in fore wing R_1 free, approximate to or coincident with *Sc*, R_2 always free, R_3 and R_4 always stalked, R_5 always free ; M_1 present ; in hind wing cell closed, M_1 from upper angle of cell, M_2 present ; fore wing in most species yellow or brown, in many species with metallic scales ; discal dot often present ; median dot absent in most species ; subterminal line present in most species, median line present or absent ; no longitudinal light stripe.

Male genitalia of *Chilo* : Uncus short and stout, sharply pointed ; gnathos as long as uncus ; uncus and gnathos do not offer specific characters ; valva rather simple, often with slight pars basalis (a process at base of costa) ; sacculus without process ; vinculum greatly elongate ; saccus and pseudosaccus well developed ; aedeagus greatly elongate with or without cornuti ; often with bulbose basal projection and ventral arm ; juxta-plate in most species with long arms, sometimes asymmetrical.

Female genitalia of *Chilo* : Papillae anales broad with ends coalescent with each other ; posterior apophyses slender ; membrane linking eighth to seventh segment without spikes ; anterior apophyses present ; seventh sternum often with heavily sclerotized plate ; ostial pouch linked to eighth segment by a membrane ; signum present or absent, in some species two signa.

Very good specific characters are offered by the shape of the face, the presence or absence of metallic scales on the fore wing, the shape of the arms of the juxta-plate and of the aedeagus, the presence or absence of the bulbose basal projection and ventral arms of the aedeagus, size of the cornuti, presence or absence of a signum and the shape of the ostial pouch ; the heavily sclerotized plate of the seventh sternum in the female often offers good specific characters, but in some species it varies considerably.

The shape of the face is a relatively constant character in most species of *Chilo*. However, *orichalcociliellus* Strand shows face variable ; it may be slightly or strongly conical, with or without a sharp point. It is interesting that the very closely allied *aleniellus* Strand and *thyrsis* Blesz. always seem to have a rounded face without a trace of a point. A few Palaearctic species have a strongly conical and pointed face plus a ventral ridge. Such a ridge occurs in many species of the genus *Acigona* Hbn., but rarely in *Chilo*. The ridge may be triangular or semicircular, but it may vary slightly in its shape in one species. As mentioned above, Kapur erected a genus *Chilotraea* characterized by rounded face and R_1 coincident with *Sc* in the fore wing. However, both characters have only specific value in *Chilo*. The position of R_1 may vary within an individual species. Moreover, several species, i.e. *pulverosellus*, *agamemnon*, *ceylonicus* have the face rounded as in *Chilo*, *sensu* Kapur and R_1 in the fore wing free as in *Chilotraea*.

The presence of metallic scales in the fore wing is one of the best characters in distinguishing species of *Chilo*. However, it should be noted that some specimens bear only a small number of metallic scales, e.g. *pulveratus* Wileman & South or *crypsimetallus* Turner.

The shape and armature of the arms of the juxta-plate are also good taxonomic characters, but are variable in some species, particularly in *orichalcociliellus*. It is worth noting that an incorrect preparation of a genitalic slide often distorts arms of the juxta-plate and may make determination difficult.

The number and size of cornuti seem to be constant except in *sacchariphagus* and its subspecies.

The presence, shape and number of signa is constant except in species which have a weakly developed signum, for example *auricicilius* Dudgeon.

GEOGRAPHICAL DISTRIBUTION

Most species of *Chilo* are represented in the Ethiopian and Oriental Regions. Only one species, *chiriquitensis* Z. is confined to the Neotropical Region, four are confined to the Nearctic Region. The Palaearctic Region has 13 species, but five of them represent the Oriental element in the Palaearctic fauna, and one species, *agamemnon* Blesz. invaded the Near East from East Africa. The Oriental Region is inhabited by 14 species of *Chilo*. The Australian Region has only three species, *terrenellus* Pag., *louisiadalis* Hmps. and *crypsimetallus*. *C. terrenellus* and *louisiadalis* are also known from Vulcan Island. The present centre of distribution of *Chilo*, however, is the Ethiopian Region where are found 18 species, one of which, *partellus*, may be of Oriental origin. It is known from East Africa and the Comores.

The distribution of some species may have been affected by the fact that they are notorious pests of rice, sugar-cane, maize, sorghum and other graminaceous crops, so that artificial introductions may play a role in the geographical distribution of *suppressalis* Walk., *partellus* Swinhoe, *infuscatellus*, and particularly *sacchariphagus*. The latter is widely distributed in India, China, Formosa, Malaya, Indonesia, the Philippines, but is known also from Madagascar, Reunion and Mauritius. The population occurring in Madagascar, Reunion and Mauritius is very similar to the form from Indonesia and the Philippines. So far there is no record of this species from the African continent. In recent times *agamemnon* spread from central to northern Israel. This species seems to be of Ethiopian origin with subsequent invasion (or artificial introduction) to Middle East. *C. suppressalis*, an Oriental species, with intrusion to the south-east of the Palaearctic Region, is found in rice fields in Spain and in Hawaii.

BIOLOGY AND ECONOMIC IMPORTANCE

The larvae of all *Chilo* are stem-borers. The females lay from 200 to 300 eggs on the surface of the host-plant. Copulation generally occurs at night. Eggs are often laid a few hours after copulation. The eggs develop within 4–8 days. The larva bores in the stalk, and is fully developed within about 2–3 weeks. Depending on the species and climatic conditions there are one to six generations a year. In Central Europe, there is only one generation of *phragmitellus*. Rivnay (1967 : 15) writes about *agamemnon* in Israel : ‘The offspring of the September moths enter diapause in the larval stage ; some of these constitute the sixth generation, which is in hibernation. The percentage of diapausing larvae is low at the beginning of September and increases until October, except when extraordinary temperature conditions prevail.’ Gupta (1904 : 796) states that the larvae of *infuscatellus* are very active, often dispersing themselves on their silken threads from plant to plant. The larvae eat into the centre of the plant, causing the characteristic 'dead-heart' appearance. Later the larvae bore into the stems between the nodes. Gupta also states that the larval moult takes about one hour and that the number of moults varies, increasing to 7 or 8 in larvae which had hibernated. The pupal period varies from 10–12 days in February but is reduced to 6–8 days in summer. The adults emerge in the early morning, generally before sunrise.

Several *Chilo* species are known as notorious pests of graminaceous crops: for example, *sacchariphagus*, *partellus*, *tumidicostalis*, *auricilius* and *infuscatellus* are pests of sugar-cane in Southern and Eastern Asia and Eastern Africa. Rice is mostly attacked by *supressalis* and *partellus*, but also by *agamemnon*. *C. agamemnon*, *zacconius*, *diffusilineus*, *partellus* and *orichalcociliellus* are known to attack maize. For details the reader is referred to the very extensive literature on the biology and control of *Chilo*. The detailed bibliography of the *Chilo* literature was published by Katiyar (1964).

SPECIES DESCRIBED IN *CHILO* WHICH HAVE BEEN TRANSFERRED TO OTHER GENERA

Chilo acuminatus Butler, 1878 (referable to Plutellidae).
Chilo aditellus Walker, 1864 (referable to Schoenobiinae).
Chilo aeneociliella Eversmann, 1844 (referable to *Agriphila* Hbn.).
Chilo aglaopis Turner, 1911 (referable to *Neargyrioides* Blesz.).
Chilo albimarginalis Hampson, 1919 (referable to *Acigona* Hbn.).
Chilo alfoldellus Schaus, 1922 (referable to *Acigona obliquilineella* Hampson).
Chilo ambiguellus Snellen, 1890 (referable to Schoenobiinae).
Chilo angustipennis Zeller, 1877 (referable to *Orocrambus* Purdie).
Chilo aracalis Schaus, 1934 (referable to *Acigona* Hbn.).
Chilo araealis Hampson, 1912 (referable to *Acigona* Hbn.). **comb. n.**
Chilo argentifascia Hampson, 1919 (referable to *Corynophora* Berg).
Chilo argentosus Snellen, 1893 (referable to *Hemiptocha* Dognin).
Chilo argyrostola Hampson, 1919 (referable to *Argyria* Hbn.).
Chilo ascriptalis Hampson, 1919 (referable to *Acigona* Hbn.).
Chilo aureliellus Fischer v. Roesslerstamm, 1841 (referable to *Calamotropha* Z.).
Chilo aurescellus Fischer v. Roesslerstamm, 1841 (mis-spelling of *aureliellus*).
Chilo bivittellus Moore, 1872 (referable to *Charltona* Swinhoe).
Chilo bostralis Hampson, 1919 (referable to Pyraustinae, *Pyrausta* Schrank).
Chilo calamistis Hampson, 1919 (referable to *Acigona* Hbn.).
Chilo carnifex Coquerel, 1855 (referable to Phycitinae, *Metoecis* Mabille).
Chilo centrellus Möschler, 1883 (referable to *Diatraea* Guild.).
Chilo ceres Butler, 1883 (referable to *Thopeutis respersalis* Hbn.).
Chilo cervinellus Moore, 1872 (referable to *Charltona* Swinhoe).
Chilo chabilalis Schaus, 1834 (referable to *Acigona* Hbn.).
Chilo chillanicus Butler, 1883 (referable to *Fernandocrambus* Aurivillius).
Chilo chrysographellus Kollar, 1844 (referable to *Ancylolomia* Hbn.).
Chilo comparellus Felder and Rogenhofer, 1875 (referable to *Acigona infusella* Walk.).

Chilo crambidoides Grote, 1880 (referable to *Diatraea* Guild.).
Chilo culmicolellus Zeller, 1863 (referable to *Diatraea lineolata* (Walk.).
Chilo cuneellus Treitschke, 1835 (referable to *Catoptria pyramidella* (Tr.)).
Chilo cynedradellus Schaus, 1922 (referable to *Acigona* Hbn.).
Chilo densellus Zeller, 1881 (referable to *Acigona* Hbn.). **comb. n.**
Chilo diffusifascia Hampson, 1919 (referable to *Thopeutis* Hbn.).
Chilo diletantellus Dyar, 1912 (referable to *Acigona* Hbn.).
Chilo discellus Walker, 1867 (referable to *Calamotropha* Z.).
Chilo dodatellus Walker, 1864 (referable to Schoenobiinae, *Schoenobius* Dup.).
Chilo duomita Dyar, 1912 (referable to *Acigona* Hbn.).
Chilo excerptalis Walker, 1863 (referable to Schoenobiinae, *Apurima* Walk.).
Chilo eximiellus Zincken, 1821 (referable to *Cervicrambus* Blesz.).
Chilo forbesellus Fernald, 1896 (referable to *Thopeutis* Hbn.).
Chilo funerellus Hampson, 1896 (referable to Schoenobiinae, *Schoenobius* Dup.).
Chilo furcatellus Zetterstedt, 1840 (referable to *Catoptria* Hbn.).
Chilo fuscicilia Hampson, 1910 (referable to *Acigona* Hbn.). **comb. n.**
Chilo fuscidentalis Hampson, 1896 (referable to Pyraustinae).
Chilo gildasellus Schaus, 1924 (referable to Schoenobiinae, *Schoenobius* Dup.).
Chilo gratiosellus Walker, 1864 (referable to Schoenobiinae, synonym of *Schoenobius incertulas* Walker).
Chilo griseoradians J. de Joannis, 1930 (referable to *Acigona steniella* Hmps.).
Chilo hederalis Amsel, 1935 (referable to *Thopeutis galleriella* (Rag.).
Chilo heracleus Zeller, 1877 (referable to Schoenobiinae, *Erupa* Walk.). **comb. n.**
Chilo hypenalis Rebel, 1910 (referable to *Pseudobissetia terrestrella* (Christ.).
Chilo ignitalis Hampson, 1896 (referable to *Acigona infusella* (Walk.).
Chilo incanellus Hampson, 1896 (referable to *Myelobia* H.-S.).
Chilo incertellus Zincken, 1821 (referable to *Mesolia* Rag.).
Chilo incertulas Walker, 1863 (referable to Schoenobiinae, *Schoenobius* Dup.).
Chilo inconspicuellus Moore, 1872 (referable to *Charltona* Swinhoe).
Chilo infusellus Walker, 1863 (referable to *Acigona* Hbn.).
Chilo ingloriellus Möschler, 1882 (referable to Schoenobiinae, *Schoenobius* Dup.).
Chilo interlineatus Zeller, 1881 (referable to *Acigona* Hbn.).
Chilo interruptellus Moore, 1872 (referable to *Charltona* Swinhoe).
Chilo irrectellus Möschler, 1882 (referable to *Pseudometachilo* Blesz.).
Chilo lativittalis Dognin, 1910 (referable to *Diatraea* Guild.).
Chilo latmiadelis Dognin, 1923 (referable to *Diatraea lativittalis* (Dognin).
Chilo lathoniellus Zincken, 1817 (referable to *Crambus nemorellus* (Hbn.).
Chilo leachellus Zincken, 1818 (referable to *Crambus* F.).
Chilo leptigrammalis Hampson, 1919 (referable to *Acigona* Hbn.).
Chilo leptogrammellus Meyrick, 1879 (referable to *Calamotropha* Z.).
Chilo leucanialis Butler, 1877 (referable to *Orocrambus* Purdie).
Chilo leucocraspsis Hampson, 1919 (referable to *Acigona* Hbn.).
Chilo locupletellus Kollar, 1844 (referable to *Ancylolomia* Hbn.).
Chilo loftini Dyar, 1917 (referable to *Acigona* Hbn.).
Chilo maculalis Predota, 1934 (referable to *Thopeutis galleriella* (Rag.).

Chilo majorellus Costa, 1836 (referable to Phycitinae, synonym of *Etiella zinckenella* Treitschke).
Chilo marcella Schaus, 1913 (referable to *Acigona* Hbn.).
Chilo matanzalis Schaus, 1922 (referable to *Epina dichromella* Walk.).
Chilo mercurellus Zetterstedt, 1840 (referable to Scopariinae, *Scoparia* Curt.).
Chilo mesostrigalis Hampson, 1919 (referable to *Calamotropha* Z.).
Chilo morbidellus Dyar, 1913 (referable to *Acigona* Hbn.).
Chilo multipunctellus Kearfott, 1908 (referable to *Acigona* Hbn.).
Chilo neuricellus Zeller, 1863 (referable to *Diatraea lineolata* (Walk.).
Chilo nigristigmellus Hampson, 1896 (referable to *Myelobia* H.-S.).
Chilo nivellus Kollar, 1844 (referable to *Crambus* F.).
Chilo obliquilineellus Hampson, 1896 (referable to *Acigona* Hbn.).
Chilo obliteratellus Zeller, 1863 (referable to *Diatraea saccharalis* (F.).
Chilo obtusellus Stainton, 1856 (referable to *Calamotropha paludella* (Hbn.).
Chilo ocellellus Zetterstedt (referable to *Crambus alienellus* (Germar & Kaulfuss)).
Chilo opinionellus Dyar, 1917 (referable to *Acigona* Hbn.).
Chilo ortellus Swinhoe, 1886 (referable to *Charltona* Swinhoe).
Chilo oxyprora Turner, 1904 (referable to *Nechilo* Blesz.)
Chilo parramattellus Meyrick, 1879 (referable to *Calamotropha paludella* (Hbn.)).
Chilo pauperellus Treitschke, 1832 (referable to *Catoptria* Hbn.).
Chilo phlebitalis Hampson, 1919 (referable to *Acigona* Hbn.).
Chilo poliellus Treitschke, 1832 (referable to *Agriphila* Hbn.).
Chilo porrectellus Walker (referable to Plutellidae, *Plutella* Schrank).
Chilo powelli D. Lucas, 1862 (referable to *Ancylolomia disparella* (Hbn.)).
Chilo praefectellus Zincken, 1821 (referable to *Crambus* F.).
Chilo prophylactes Meyrick, 1934 (referable to *Acigona* Hbn.). **comb. n.**
Chilo puritellus Kearfott, 1908 (referable to *Acigona* Hbn.). **comb. n.**
Chilo purpurealis Hampson, 1896 (referable to *Acigona infusella* (Walk.)).
Chilo pyramidellus Treitschke, 1832 (referable to *Catoptria* Hbn.).
Chilo pyrocaustalis Hampson, 1919 (referable to *Acigona ignefusalis* (Hmps.)). **comb. n.**
Chilo rabatellus D. Lucas, 1939 (referable to *Ancylolomia inornata* Stgr.).
Chilo repugnatalis Walker, 1863 (referable to Schoenobiinae, *Apurima* Walk.).
Chilo rufulalis Hampson, 1919 (referable to *Acigona* Hbn.). **comb. n.**
Chilo semivittalis Dognin, 1907 (referable to *Acigona* Hbn.).
Chilo simplex Butler, 1877 (referable to *Orocrambus* Purdie).
Chilo sordidellus Zincken, 1821 (referable to Schoenobiinae).
Chilo spectabilis Felder & Rogenhofer, 1875 (referable to *Myelobia zeuzeroides* (Walk.)).
Chilo spurcatellus Walker (referable to Schoenobiinae, *Schoenobius* (Dup.)).
Chilo squamulellus Zeller, 1881 (referable to *Acigona* Hbn.). **comb. n.**
Chilo steniellus Hampson, 1899 (referable to *Acigona* Hbn.).
Chilo stenziellus Treitschke, 1835 (referable to *Catoptria conchella* (D. & Schiff.).
Chilo strigatellus Hampson, 1919 (referable to *Acigona* Hbn.). **comb. n.**
Chilo strigellus Treitschke, 1833 (referable to *Acigona cicatricella* (Hbn.)).

Chilo submedianalis Hampson, 1919 (referable to *Thopeutis galleriella* (Rag.)).
Chilo surinamellus Möschler, 1822 (referable to *Acigona infusella* (Walk.)).
Chilo terrestrellus Christoph, 1885 (referable to *Pseudobissetia* Blesz.).
Chilo teterrellus Zincken, 1821 (referable to *Pediasia* Hbn.).
Chilo torpidellus Zeller, 1852 (referable to *Calamotropha* Z.).
Chilo truncatellus Schaus, 1922 (referable to *Acigona leucocraspis* (Hmps.)).
Chilo truncatellus Zetterstedt, 1840 (referable to *Pediasia* Hbn.).
Chilo trypetes Bisset, 1939 (referable to *Acigona steniella* (Hmps.)).
Chilo unicolorellus Zeller, 1863 (referable to *Calamotropha* Z.).
Chilo venatella Schaus, 1922 (referable to *Argyria* Hbn.).
Chilo verellus Zincken, 1817 (referable to *Catoptria* Hbn.).
Chilo vinosellus Hampson, 1896 (referable to Schoenobiinae, *Schoenobius* Dup.).
Chilo virgatus Felder & Rogenhofer, 1875 (referable to Schoenobiinae, *Erupa* Walk.).
Chilo xylinalis Hampson, 1896 (referable to *Thopeutis* Hbn.).

SPECIES OF *CHILO* UNRECOGNIZED

C. batri (Fletcher), 1928 : 59 (described in *Diatraea* Guild.). Type-locality : India, Bihar. Type : not traced.

C. cinnamomellus Berg, 1875 : 88. Type-locality : Patagonia. Type : location unknown.

C. ikri (Fletcher), 1928 : 60, pl. 7, fig. 2, pl. 8, fig. 2, pl. 9, fig. 1 (described in *Diatraea* Guild.). Type-locality : India, Bihar. Type : not traced.

C. kanra (Fletcher), 1928 : 59, pl. 5, fig. 1, pl. 6, fig. 1 (described in *Diatraea* Guild.). Type-locality : India. Type : not traced.

C. recalvus Wallengren, 1876 : 126. Type-locality : Transvaal. Type : location unknown.

C. saccharicola Fletcher, 1928 : 59, pl. 6, fig. 2. Type-locality : India. Type : not traced.

C. spatiosellus Möschler, 1882 : 436, pl. 18, fig. 41. Type-locality : Surinam. Type : lost.

CHILO Zincken

Chilo Zincken, 1817 : 23. Type-species : [*Tinea*] *phragmitella* Hübner, [1805] [Selected by Duponchel, 1836 : 9].

Proceras Bojer, 1856 : (not paginated). Type-species : *Proceras sacchariphagus* Bojer, 1856, by monotypy [Syn. Bleszynski, 1966 : 477].

Borer Guenée *in* Maillard, 1862. Type-species : *Borer saccharellus* Guenée, 1862, by monotypy [Syn. Tams, 1942 : 67].

Diphryx Grote, 1822 : 273. Type-species : *Diphryx prolatella* Grote, 1882, by monotypy [Syn. Hampson, 1896*a* : 954].

Chilo Zincken ; Fernald, 1896 : 77.

Chilo Zincken ; Hampson, 1896*a* : 954 [In part].

Nephalia Turner, 1911 : 113. Type-species : *Nephalia crypsimetalla* Turner, 1911, by monotypy [Syn. Bleszynski, 1966 : 478].

Hypiesta Hampson, 1919 : 538. Type-species : *Hypiesta argyrogramma* Hampson, 1919, by monotypy [Syn. Bleszynski, 1966 : 478].

Silveria Dyar, 1925 : 10. Type-species : *Silveria hexhex* Dyar, 1925, by original designation [Syn. Bleszynski, 1962*b* : 108].
Diatraenopsis Dyar & Heinrich. 1927 : 39 [In part].
Silveria Dyar ; Dyar & Heinrich, 1927 : 31.
Proceras Bojer ; Tams, 1942 : 67.
Chilo Zincken ; Kapur, 1950 : 394.
Proceras Bojer ; Kapur, 1950 : 410.
Chilotraea Kapur, 1950 : 402. Type-species : *Chilo infuscatellus* Snellen, 1890, by original designation [Syn. Bleszynski, 1962*a* : 1].
Chilo Zincken ; Okano, 1950 : 122.
Chilo Zincken ; Bleszynski, 1962*b* : 98.
Chilo Zincken ; Bleszynski, 1965 : 102.
Proceras Bojer ; Bleszynski, 1965 : 122.
Chilo Zincken ; Bleszynski, 1966 : 478.
Chilo Zincken ; Bleszynski, 1969 : 12.

KEY FOR THE IDENTIFICATION OF SPECIES

1		In fore wing R_1 free	2
–		In fore wing R_1 coincident with *Sc*	36
2	(1)	Face conical with distinct point	3
–		Face rounded without point	23
3	(2)	Face with distinct ventral ridge	4
–		Face with vestigial ridge or ventral ridge absent	15
4	(3)	♂	5
–		♀	10
5	(4)	Aedeagus with ventral arm	6
–		Aedeagus without ventral arm	9
6	(5)	Costa of valva with strong median projection	15
–		Costa of valva without distinct median projection	7
7	(6)	Arms of juxta-plate not swollen	8
–		Arms of juxta-plate distinctly swollen (Text-fig. 18)	***suppressalis*** (p. 120)
8	(7)	Juxta-plate as in Text-fig. 19	***hyrax*** (p. 122)
–		Juxta-plate as in Text-fig. 23	***christophi*** (p. 124)
9	(5)	Arms of juxta-plate distinctly unequal in length (Text-fig. 13)	***phragmitellus*** (p. 114)
–		Arms of juxta-plate almost equal in length (Text-fig. 14)	***luteellus*** (p. 116)
10	(4)	Signum absent (except of area of scobinations)	11
–		Signum present	12
11	(10)	Ductus bursae with distinct swelling (Text-fig. 16)	***luteellus*** (p. 116)
–		Ductus bursae without distinct swelling (Text-fig. 15)	***phragmitellus*** (p. 114)
12	(10)	Signum elongate	13
–		Signum lamellate, rectangular or almost rectangular	15
13	(12)	Ductus bursae twisted at ostial pouch	14
–		Ductus bursae not twisted at ostial pouch	15
14	(13)	Ostial pouch large (Text-fig. 21)	***christophi*** (p. 124)
–		Ostial pouch small, slightly demarcated (Text-fig. 17)	***suppressalis*** (p. 120)
15	(6)	Fore wing with at least a few metallic scales	***erianthalis*** (p. 176)
–		Fore wing without metallic scales	16
16	(15)	Fore wing with small discal dot, or discal dot absent	17
–		Fore wing with very distinct, large discal dot. ♂ unknown	***tamsi*** (p. 128)
17	(16)	♂	18
–		♀	21

18	(17)	Aedeagus with bulbose basal projection	19
–		Aedeagus without bulbose basal projection	***tumidicostalis*** (p. 134)
19	(18)	Costa with stong median projection (Text-fig. 26)	***partellus*** (p. 126)
–		Costa without strong median projection	20
20	(19)	Arms of juxta-plate very long, ventral arm of aedeagus very long (Text-fig. 24). ♀ unknown	***vergilius*** (p. 119)
–		Arms of juxta-plate moderately long, ventral arm of aedeagus rather short (Text-fig. 108)	***demotellus*** (p. 172)
21	(17)	Signum present (Text-fig. 28)	***partellus*** (p. 126)
–		Signum absent	22
22	(21)	Indian species. Genitalia as in Text-fig. 36	***tumidicostalis*** (p. 134)
–		North American species. Genitalia as in Text-fig. 110	***demotellus*** (p. 172)
23	(2)	Fore wing with at least a few metallic scales	24
–		Fore wing without metallic scales	29
24	(23)	♂	25
–		♀	27
25	(24)	Aedeagus with ventral arm	26
–		Aedeagus without ventral arm (Text-fig. 37)	***ceylonicus*** (p. 138)
26	(25)	Aedeagus with cornuti; juxta-plate with median long projection (Text-fig. 72). Ethiopian species	***mesoplagalis*** (p. 156)
–		Aedeagus without cornuti; juxta-plate without median projection (Text-fig. 109). North American species	***plejadellus*** (p. 174)
27	(24)	Signum much elongate (Text-fig. 111)	***plejadellus*** (p. 174)
–		Signum not elongate	28
28	(27)	Oriental species. Costa of fore wing not edged with brown. Genitalia as in Text-fig. 41	***ceylonicus*** (p. 138)
–		Ethiopian species. Costa of fore wing distinctly darkened with brown. Genitalia as in Text-fig. 78	***mesoplagalis*** (p. 156)
29	(23)	Face slightly conical	***tumidicostalis*** (p. 172)
–		Face rounded	30
30	(29)	♂	31
–		♀	34
31	(30)	Cornuti in aedeagus absent (Text-fig. 25)	***pulverosellus*** (p. 124)
–		Cornuti in aedeagus present	32
32	(31)	Aedeagus with bulbose basal projection (Text-fig. 55)	***agamemnon*** (p. 145)
–		Aedeagus without bulbose basal projection	33
33	(32)	Arms of juxta-plate almost equal in length (Text-fig. 66)	***luniferalis*** (p. 152)
–		Arms of juxta-plate distinctly not equal in length, right arm much longer than valva (Text-fig. 67)	***perfusalis*** (p. 155)
34	(30)	Ductus bursae with projection near ostial pouch (Text-fig. 55)	***agamemnon*** (p. 145)
–		Ductus bursae without projection near ostial pouch	35
35	(34)	Ductus bursae entirely lightly sclerotized (Text-fig. 22)	***pulverosellus*** (p. 124)
–		Ductus bursae partly heavily sclerotized (Text-figs 68–71)	***luniferalis*** (p. 152) & ***perfusalis*** (p. 155)
36	(1)	Fore wing with metallic scales	37
–		Fore wing without metallic scales	63
37	(36)	Neotropical species. Genitalia as in Text-figs 114–118	***chiriquitensis*** (p. 178)
–		Old World species	38
38	(37)	Oriental and Australian species	39
–		Ethiopian species	51
39	(38)	♂	40
–		♀	45
40	(39)	Juxta-plate symmetrical	41
–		Juxta-plate asymmetrical	25

41 (40) Aedeagus with ventral arm 42

– Aedeagus without ventral arm 44

42 (41) Ventral arm of aedeagus notched 43

– Ventral arm of aedeagus without notch (Text-fig. 31) ***pulveratus*** (p. 132)

43 (42) Pars basalis absent ; notch of juxta-plate small (Text-fig. 38) ***auricilius*** (p. 135)

– Pars basalis present ; notch of juxta-plate very deep (Text-fig. 46) ***polychrysus*** (p. 140)

44 (41) Arms of juxta-plate long ; cornuti absent (Text-fig. 33) ***bandra*** (p. 133)

– Arms of juxta-plate very short ; cornuti present (Text-fig. 39) ***crypsimetallus*** (p. 138)

45 (39) Signum present 46

– Signum absent 48

46 (45) One signum 47

– Two signa (Text-fig. 34) ***pulveratus*** (p. 132)

47 (46) Signum very distinct, lamellate (Text-figs 40–42) ***ceylonicus*** (p. 138)

– Signum weak 48

48 (45) Genitalia as in Text-fig. 35 ***bandra*** (p. 133)

– Genitalia as in Text-figs 43–45 and 52 49

49 (48) Genitalia as in Text-fig. 43. Signum present or absent ***auricilius*** (p. 135)

– Genitalia as in Text-figs 44, 45 and 52. Signum absent 50

50 (49) Genitalia as in Text-figs 44, 45 ***crypsimetallus*** (p. 138)

– Genitalia as in Text-fig. 52 ***polychrysus*** (p. 140)

51 (38) ♂ 52

– ♀ 57

52 (51) Cornuti very distinct, medium-sized (Text-figs 72, 74, 80, 81) 53

– Cornuti small (Text-figs 85–90, 94–96) 55

53 (52) Aedeagus with bulbose basal projection (Text-fig. 74) ***argyrogrammus*** (p. 158)

– Aedeagus without bulbose basal projection 54

54 (53) Ventral arm of aedeagus very short (Text-fig. 72) ***costifusalis*** (p. 155)

– Ventral arm of aedeagus very long (Text-figs 80–81) ***argyropastus*** (p. 159)

55 (52) Valva broad, slightly tapering (Text-figs 85–87) ***orichalcociliellus*** (p. 162)

– Valva distinctly tapering caudad (Text-figs 88–90, 94–96) 56

56 (57) Arms of juxta-plate equal in length, or right arm at most three-quarters of length of left arm (Text-figs 88–90) ***aleniellus*** (p. 165)

– Right arm of juxta-plate much shorter than left arm (Text-figs 94–96) ***thyrsis*** (p. 167) & ***quirimbellus*** (p. 170)

57 (51) One signum 58

– Two signa (Text-figs 75–77) ***costifusalis*** (p. 155)

58 (57) Ductus bursae very short (Text-figs 82, 83) 59

– Ductus bursae very long (Text-figs 91–93, 97–99) 60

59 (58) Signum rounded (Text-fig. 82) ***argyropastus*** (p. 159)

– Signum elongate, with slight median ridge (Text-fig. 83) ***argyrogrammus*** (p. 158)

60 (58) Seventh sternum with short spined plate and two almost triangular spined patches (Text-figs 91, 100) ***orichalcociliellus*** (p. 162)

– Triangular spined patches absent 61

61 (60) Ostial pouch with two distinct, heavily sclerotized rings (Text-figs 98, 107) ***quirimbellus*** (p. 170)

– Ostial pouch with only one heavily sclerotized ring (Text-figs 92, 93, 97, 99, 101–106) 62

62 (61) Ostial opening very small (Text-figs 92, 93, 101, 102) ***aleniellus*** (p. 165)

– Ostial opening large (Text-figs 97, 99, 103–105) ***thyrsis*** (p. 167) & ***zoriandellus*** (Text-fig. 106 (p. 170)

63	(36)	Ocellus reduced	***sacchariphagus*** (p. 181)
–		Ocellus well developed	64
64	(63)	♂	65
–		♀	73
65	(64)	Aedeagus with one big cornutus (Text-fig. 27)	***infuscatellus*** (p. 129)
–		Aedeagus without big cornutus	66
66	(65)	Aedeagus with ventral arm	67
–		Aedeagus without ventral arm	72
67	(66)	Ventral arm of aedeagus very short	68
–		Ventral arm of aedeagus long	69
68	(67)	Arms of juxta-plate equal in length, very thin (Text-fig. 79)	***mercatorius*** (p. 158)
–		Arms of juxta-plate not equal in length (Text-fig. 56)	***diffusilineus*** (p. 147)
69	(67)	Ventral arm of aedeagus broad with very deep notch	70
–		Ventral arm of aedeagus narrow, without notch	71
70	(69)	Basal margin of main part of ventral arm of aedeagus almost perpendicular to stem of ventral arm (Text-figs 50, 51). Fore wing without distinct, light, longitudinal lines	***terrenellus*** (p. 145)
–		Basal part of main part of ventral arm of aedeagus distinctly oblique (Text-figs 48, 49). Fore wing with several light, longitudinal lines (Pl. 2, fig. 2)	***louisiadalis*** (p. 142)
71	(69)	Ventral arm of aedeagus very long (Text-fig. 65)	***psammathis*** (p. 151)
–		Ventral arm of aedeagus rather short	43
72	(66)	Pars basalis present ; arm of juxta-plate short (Text-fig. 39)	***crypsimetallus*** (p. 138)
–		Pars basalis absent ; arms of juxta-plate very long (Text-fig. 57)	***zacconius*** (p. 149)
73	(64)	Signum present	74
–		Signum absent	76
74	(73)	One signum	75
–		Two signa	***pulveratus*** (p. 132)
75	(74)	Ostial pouch distinctly incised (Text-fig. 30)	***infuscatellus*** (p. 129)
–		Ostial pouch not incised (Text-fig. 77)	***psammathis*** (p. 151)
76	(75)	Ostial pouch with heavily sclerotized projection in ductus bursae (Text-figs 59, 60, 61)	***diffusilineus*** (p. 147)
–		Ostial pouch without heavily sclerotized projection into ductus bursae	77
77	(76)	Ostial pouch with lightly sclerotized projection (Text-fig. 62)	***zacconius*** (p. 149)
–		Ostial pouch without lightly sclerotized projection	78
78	(77)	Ostial pouch very distinctly demarcated (Text-fig. 63)	***incertus*** (p. 150)
–		Ostial pouch not distinctly demarcated	79
79	(78)	Termen of fore wing distinctly oblique	***crypsimetallus*** (p. 138)
–		Termen of fore wing slightly oblique	80
80	(79)	Fore wing with several light, longitudinal lines (Pl. 4, fig. 4)	***louisiadalis*** (p. 142)
–		Fore wing without longitudinal light lines (Pl. 4, fig. 3)	***terrenellus*** (p. 145)

Chilo phragmitellus (Hübner)

(Pl. 3, figs 1, 2 ; Text-figs 1, 2, 13, 15)

[*Tinea*] *phragmitella* Hübner, [1805], pl. 43, figs 297, 298.
Palparia rhombea Haworth, [1811] : 483.
Chilo phragmitellus (Hübner) Zincken, 1817 : 36.
Topeutis [sic] *phragmitalis* (Hübner) Hübner, [1825] : 366 [unjustified emendation].
Chilo gigantellus (Denis & Schiffermüller) Stephens, 1834 : 332 (mis-identification].
Chilo gigantellus (Denis & Schiffermüller) ; Wood, 1839 : 220, fig. 1527 [mis-identification].
Chilo phragmitellus (Hübner) ; Wood, 1839 : 220, fig. 1526.

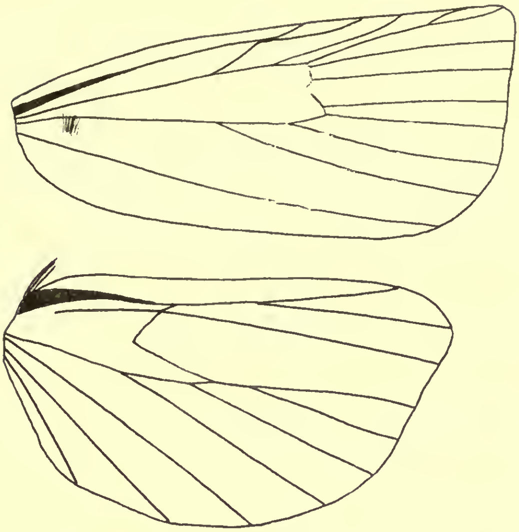
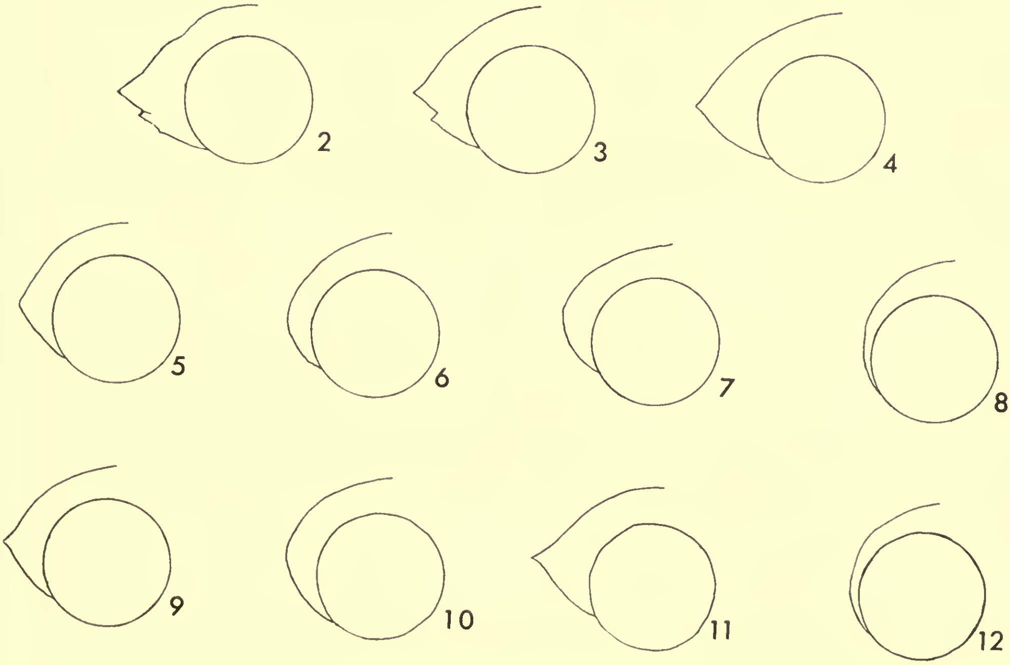


FIG. 1. *Chilo phragmitellus.* Wing venation.



FIGS 2–12. *Chilo*, faces. 2, *phragmitellus.* 3, *suppressalis.* 4, *partellus.* 5, *tumidicostalis.* 6, *infuscatellus.* 7, *pulveratus.* 8, *agamemnon.* 9, *orichalcociliellus.* 10, *aleniellus.* 11, *plejadellus.* 12, *sacchariphagus.*

Chilo phragmitellus (Hübner) ; Okano, 1962 : 125, pl. 15, fig. 4 [♂ genitalia].
Chilo phragmitellus (Hübner) ; Bleszynski, 1965 : 104, figs 55–1 [wing venation], 55–2 [head], 55–3, 4, 5, 6 [larva], 55–7, 8 [face], pl. 4, figs 55–1, 2 [imago], pl. 41, fig. 55 [♂ genitalia], pl. 93, fig. 55 [♀ genitalia].

Ocellus well developed. Face strongly conical with distinct point and strong ventral ridge (Text-fig. 2). Labial palpus 4·5 (♂) to 5·5 (♀) times as long as diameter of eye. Fore wing : length 12·0–22·0 mm, ♂ generally smaller than ♀ : R_1 free ; ground colour dull, varying from straw-yellow to dark brown, in some instance with an ochreous hue ; variably dusted with dark scales over basal and dorsal areas ; transverse lines absent ; metallic scales absent discal dot in most specimens distinct. Hind wing grey or beige in ♂ and silky white or white in ♀.

f. *intermediellus* Raebel, 1925 : 100. Specimens with brown fore wing.

f. *nigricellus* Raebel, 1925 : 100. Fore wing unicolorous very dark brown. Both forms described from Germany.

♂ genitalia (Text-fig. 13) : valva without pars basalis ; arms of juxta-plate asymmetrical, the left one much shorter than right, each provided with subapical tooth ; aedeagus without ventral arm or bulbose basal projection.

♀ genitalia (Text-fig. 15) : ostial pouch not demarcated from ductus bursae ; the latter with caudal one-third heavily sclerotized, smooth middle portion moderately sclerotized ; proximal one-third lightly sclerotized ; signum absent.

The larva feeds from September to June on *Phragmites communis* and *Glyceria aquatica*. For details on biology the reader is referred to Sorhagen, 1886 : 34, Reutti, 1898 : 158, Spuler, 1910 : 197, Schütze, 1931 : 21, Heinrich, 1925 : 159, Raebel, 1925 : 100. The chaetotaxy of the larva was figured by Hasenfuss, 1960 : 156, fig. 164. The adults are on the wing in Europe from June to August.

Distribution. North, Central and South Europe ; Ukraine ; Near East ; Central Asia ; Prov. Shantung, China ; Hokkaido, Japan. So far I have not seen any specimen from Spain or Portugal. The range of *phragmitellus* partly overlaps that of *luteellus*.

C. phragmitellus is similar to *luteellus* but is easily separable by the absence of the metallically lustrous scales present on the fore wing in *luteellus*. The genitalia of the two species show very good specific characters : in *luteellus* the arms of the juxta-plate are equally long, but are unequal in *phragmitellus* ; in the female genitalia of *luteellus* the ductus bursae has a distinct swelling lacking in *phragmitellus*.

Type-material of *phragmitellus* is lost.

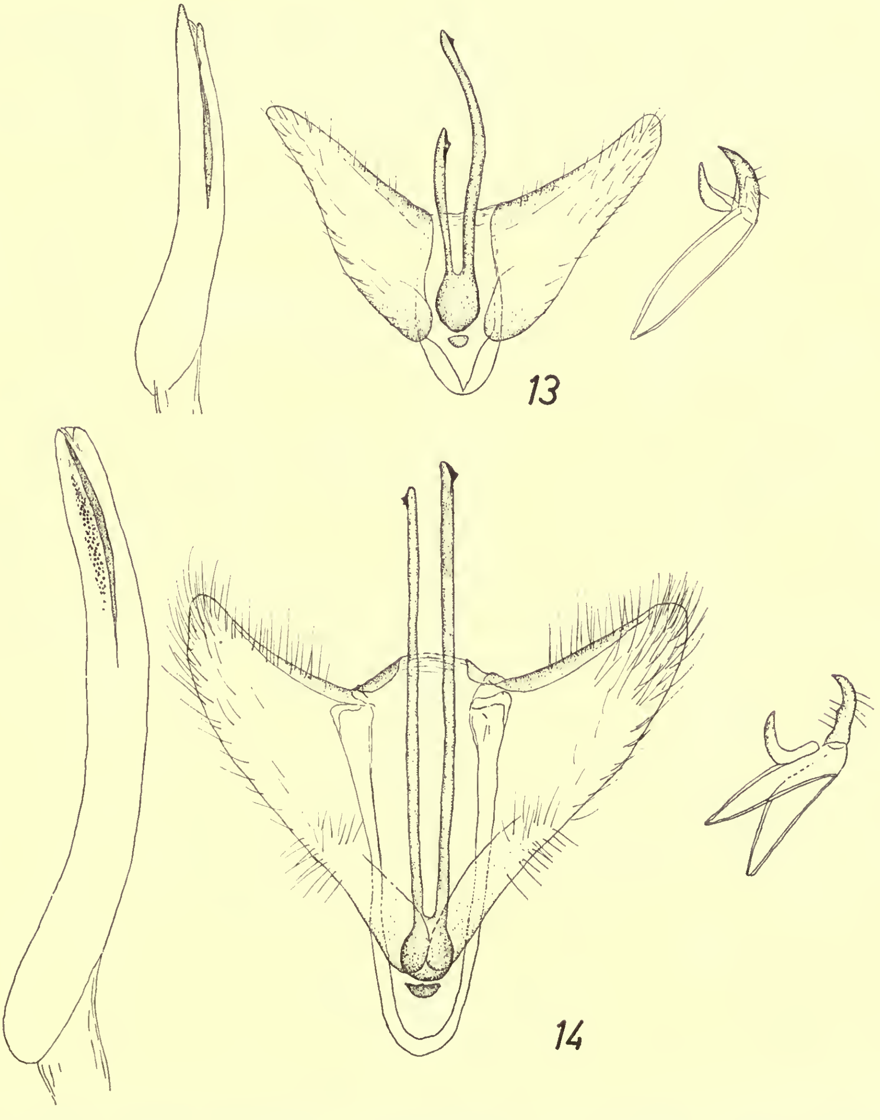
Type material examined. *Rhombea*. LECTOTYPE ♂ (present designation). '*rhombea*', England, in BM(NH).

Other material. HUNGARY : 16 ex. in BM(NH) and in author's coll ; POLAND : Lower Silesia, viii, 7 ex. in author's coll. CENTRAL ASIA : Buchara, 1 ♀ ; Syr-Darja, 1 ♂, Semipalatinsk, 21 ex., in Zoologitscheskij Institut, Leningrad ; Dsharkent, 1 ♂, in Zoologische Sammlung d. Bayerischen Staates, Munich. CHINA : Prov. Shantung, 1 ♂ in Muzeul G. Antipa, Bucharest.

Chilo luteellus (Motschulsky)
(Pl. 3, fig. 3 ; Text-figs 14, 16)

Schoenobius luteellus Motschulsky, 1866 : 199.

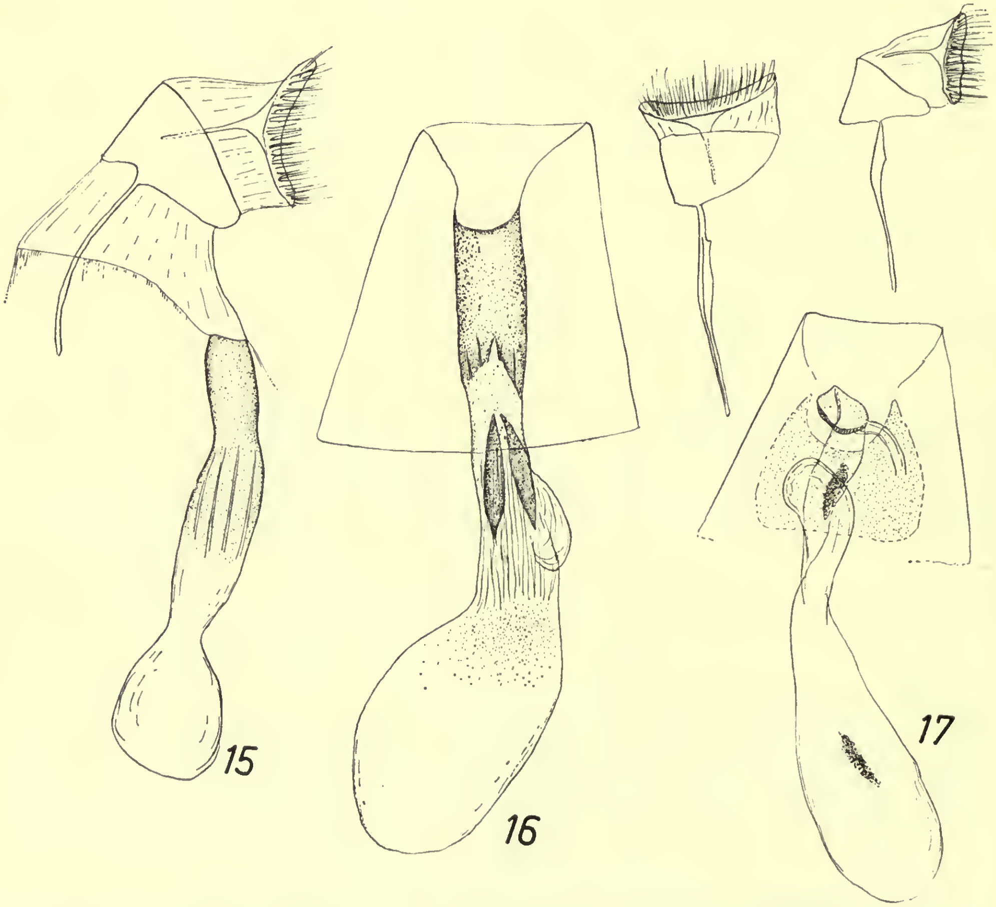
Chilo concolorellus Christoph, 1885 : 149, pl. 8, fig. 15 a, b [syn. Bleszynski, 1962*b* : 108].
Chilo gensanellus Leech, 1889 : 108, pl. 5, fig. 9 [syn. Kapur, 1950 : 397].
Chilo dubia Bethune-Baker, 1894 : 48, pl. 1, figs 18, 19 [syn. Rebel, 1901 : 9].
Chilo lutellus (Motschulsky) Hampson, 1896 : 956 [mis-spelling].
Chilo boxanus E. Hering, 1903 : 111 [syn. Bleszynski, 1962*b* : 108].
Chilo plumbosellus Chrétien, 1910 : 366 [syn. Bleszynski, 1962*b* : 108].
Chilo luteellus (Motschulsky) ; Shibuya, 1928*a* : 144, pl. 2, fig. 30.
Chilo pseudoplumbellus Caradja, 1932 : 117 [syn. Bleszynski, 1962*b* : 108].



FIGS 13–14. *Chilo*, ♂ genitalia. 13, *phragmitellus*. 14, *luteellus*, Syria, holotype of *molydellus*.

Chilo luteellus (Motschulsky) ; Marumo, 1933 : 55.
Chilo molydellus Zerny, *in* Osthelder, 1935 : 79 [syn. Bleszynski, 1962*b* : 108].
Chilo molybdellus (Zerny) ; Osthelder, 1941, pl. 15, fig. 9 [emendation of *molydellus*].
Chilo luteellus (Motschulsky) ; Bleszynski, 1962*b* : 108, figs 1 [♂ genitalia], 17–19 [♀ genitalia], pl. 13, figs 1, 2 [adults].
Chilo luteellus (Motschulsky) ; Okano, 1962 : 124, pl. 6, fig. 4 [♂ genitalia], pl. 14, fig. 2 [♀ genitalia].
Chilo luteellus (Motschulsky) ; Bleszynski, 1965 : 106, figs 56–1, 2 [face], pl. 4, fig. 56–1, 2 [adults], pl. 41, fig. 56 [♂ genitalia], pl. 93, fig. 56 [♀ genitalia].

Head similar as in *phragmitellus* except for labial palpus which is proportionately slightly shorter in *luteellus* : 4 (♂) to 5 (♀) times as long as diameter of eye. Fore wing : length 13·0–18·0 mm ; R_1 free ; termen in ♀ less oblique than in *phragmitellus* ; ground-colour varying from brownish yellow to brown, with variable irroration of metallically lustrous scales arranged in longitudinal rows along veins ; some specimens with a very slight trace of subterminal line. Hind wing silky white to creamy.



Figs 15–17. *Chilo*, ♀ genitalia. 15, *phragmitellus*, Europe. 16, *luteellus*, Japan. 17, *suppressalis*, Manchuria.

♂ genitalia (Text-fig. 15) : similar to *phragmitellus* but with arms of juxta-plate equal in length and much longer.

♀ genitalia (Text-fig. 17) : ductus bursae with distinct swelling which is lacking in *phragmitellus* ; corpus bursae with scobinate area.

The adults are on the wing from May to August. The data on the chaetotaxy of the larva are to be found in Kodama, 1958 : 15, pl. 4, figs 10–15. The larva and pupa were also treated by Yamanaka Mochizuki, 1960 : 24, figs 2, 5, 6.

Distribution. Spain ; south Italy ; south Roumania ; north Africa ; Near East ; Central Asia ; Prov. Shantung, China ; Korea ; Japan, Hokkaido, Honshu, Kyushu and Shikoku ; Philippines.

Type material examined. *luteellus*. Neotype ♀. ' [Japan], Kugenuma, Fujisawa, 16.ix.1959, H. Inoue ' [Selected by Bleszynski, 1965 : 106], in BM(NH).

concolorellus. Lectotype ♂. ' [Transcaspia], Askhabad, 21.9.82, *Ch. concolorellus* ' [Selected by Bleszynski, 1962*b* : 108] ; 1 ♀ paralectotype, Askhabad [the other ♀ syntype from AMUR, Baranovka is referable to *christophi*], in Zoologitscheskij Institut, Leningrad.

gensanellus. Lectotype ♂. ' [Korea], Gensan, July 1887, Leech ', GS-8608-BM [Selected by Bleszynski, 1965 : 106], in BM(NH).

boxanus. Lectotype ♀. ' China, Wu-Sung, Seitz ', GS-653-SB, in Institute of Zoology, Warsaw [Selected by Bleszynski, 1962*b* : 108] [the ♂ syntype is referable to *suppressalis*].

dubia. LECTOTYPE ♀ (present designation). ' Egypt, Alexandria, W. M. Malsden ', GS-13018-BM, in BM(NH).

plumbosellus. 6 ♂♀ syntypes, Biskra, Algeria, 7.vi and 4.ix, in Muséum National d'Histoire Naturelle, Paris.

pseudoplumbellus. Lectotype ♂. ' China Tientsin ', in Muzuel G. Antipa, Bucharest [Selected by Bleszynski, 1962*b* : 108].

molydellus. Lectotype ♂. ' Syr [ia] sept. Amanus s. Jüksek Dagh, vii./ix.1932 ; *Chilo molydellus* Type ♂ ', GS-761-SB [Selected by Bleszynski, 1965 : 106], in Naturhistorisches Museum, Vienna.

Other material. SPAIN : 1 ♀, in coll. Agenjo, Madrid ; ITALY : 1 ♂, Lazio, in author's coll. ROUMANIA : Mangalia, 1 ♂, 1 ♀, vii–viii, in author's coll. ; Mangalia, 3 ♀, vii–viii, in coll. Popescu-Gorj, Bucharest ; ALGERIA : Biskra, 12 ♀, in Museum A. Koenig, Bonn ; ISRAEL : Upper Jordan Valley, 1 ♂ 2 ♀, 16.v., in author's coll. ; CHINA : Prov. Shantung, 1 ♂, in Muzeul G. Antipa, Bucharest ; JAPAN : Honshu, 2 ♀ in author's coll. ; PHILIPPINES : Luzon, Mt. Makiling, 1 ♀, in United States National Museum, Washington, D.C.

***Chilo vergilius* sp. n.**

(Text-fig. 24)

Ocellus well developed. Face moderately produced forward with distinct point ; ventral ridge absent. Labial palpus 3 times as long as diameter of eye. Fore wing : R_1 free ; length 10·5 mm ; ground-colour very light dull white-grey ; subterminal and median lines distinct, ochreous brown ; suffusion of brown scarce scales ; discal dot absent ; terminal dots very distinct ; fringe slightly glossy, concolorous with ground-colour of wing, with darker basal line. Hind wing light brown with whitish fringe.

♂ genitalia (Text-fig. 24) : valva strongly tapering with rather distinct basal-costal projection; arms of juxta-plate equal in length, very long, thin, without subapical teeth ; aedeagus with long ventral arm and bulbose basal projection ; cornuti absent.

This species is described from one ♂. The genitalia are perfectly distinct from those in allied species ; arms of juxta-plate are somewhat similar as in *luteellus*, but shorter, thinner and without subapical teeth. The aedeagus is similar to *suppressalis*, but *suppressalis* has no bulbose basal projection. The colour and maculation somewhat resemble those in *suppressalis*, which, however, has no ochreous brown transverse lines. Moreover, the face of *suppressalis* has a distinct ventral ridge, which is absent in *vergilius*.

Holotype ♂. India, ' Bombay ', slide 11317-BM, in BM(NH).

Chilo suppressalis (Walker)
(Pl. 3, figs 4, 5 ; Text-figs 6, 17, 18)

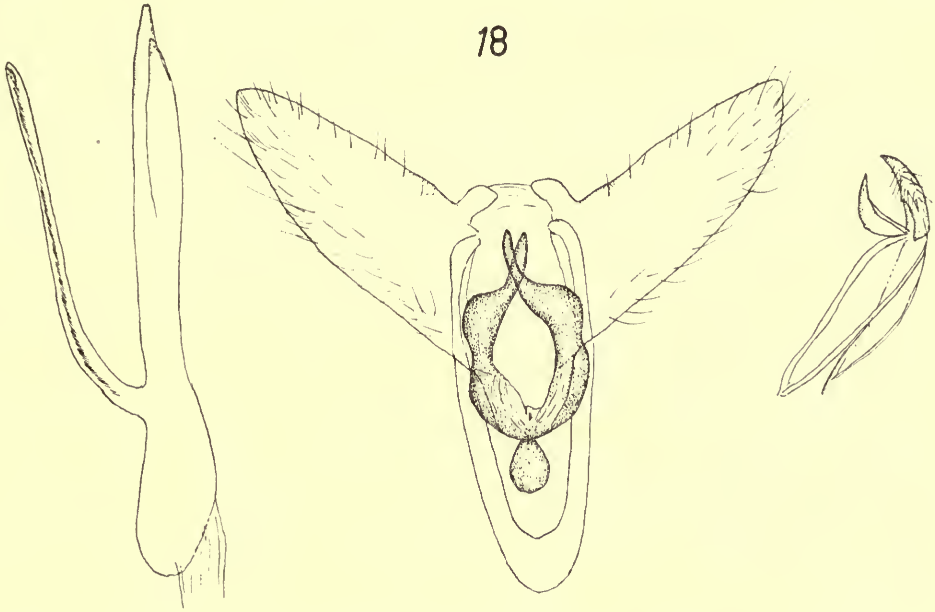
Crambus suppressalis Walker, 1863 : 166.
Jartheza simplex Butler, 1880 : 690 [syn. Kapur, 1950 : 397].
Chilo suppressalis (Walker) Hampson, 1896*a* : 957.
Chilo simplex (Butler) Rebel, 1901 : 257.
Chilo boxanus E. Hering, 1903 : 111 [♂], [in part].
Chilo simplex (Butler) ; Leech, 1901 : 397 [in part].
Chilo suppressalis (Walker) ; Leech, 1901 : 398.
Chilo simplex (Butler) ; Shibuya, 1928*a* : 143, pl. 2, figs 28, 29.
Chilo simplex (Butler) ; Shibuya, 1928*b* : 54, pl. 4, fig. 10.
Chilo oryzae Fletcher, 1928 : 59, pls 3, 4 [syn. Kawada, 1930 : 145].
Chilo simplex (Butler) ; Kawada, 1930 : 145.
Chilo simplex (Butler) ; Marumo, 1933 : 51, pl. 2, fig. 10, pl. 3, fig. 7 [labial palpus], pl. 4, fig. 4 [head], pl. 5, fig. 1 [wing venation].
Chilo orizae (Fletcher) ; Rebel, 1940 : 116, pl. 18, figs 1–4 [larva] [mis-spelling.]
Chilo suppressalis (Walker) ; Kapur, 1950 : 397, pl. 2, fig. 2 [♂ genitalia], pl. 3, figs 1, 6, 7 [♀ genitalia], 12, 13 [♀ genitalia].
Chilo suppressalis (Walker) ; Zimmerman, 1958 : 342, fig. 279 [head and wing-venation], 280 [adult], 281 [♂ genitalia].
Chilo suppressalis (Walker) ; Okano, 1962 : 124, pl. 6, fig. 5 [♂ genitalia], pl. 14, fig. 1 [♀ genitalia].
Chilo suppressalis (Walker) ; Bleszynski, 1965 : 109, fig. 58 [larva and pupa], pl. 4, figs. 58–1, 2 [adults], pl. 41, fig. 58 [♂ genitalia], pl. 93, fig. 58 [♀ genitalia].

Ocellus well developed. Face strongly protruding forward beyond eye, with very distinct corneous point and ventral ridge. Labial palpus 3 (♂) to 3·5 (♀) times as long as diameter of eye. Fore wing : length 11·0–14·0 mm ; R_1 free ; ground-colour varying from dirty white to yellow-brown, variably sprinkled with grey-brown scales ; subterminal line ill-defined or absent ; median line oblique, brown, often reduced, particularly in light coloured specimens ; metallic scales absent. Hind wing white to yellow brownish.

♂ genitalia (Text-fig. 18) : pars basalis small ; juxta-plate symmetrical, arms equally long, very distinctly swollen near apices ; subapical teeth absent ; aedeagus with long, thin, ventral arm ; bulbose basal projection absent.

♀ genitalia (Text-fig. 17) : ostial pouch heavily sclerotized, slightly demarcated from ductus bursae ; the latter posterior to ostial pouch distinctly swollen, with heavily sclerotized band ; signum distinct, elongate, with median ridge.

This species is one of the most important pests of rice in East Asia, India and Indonesia. The larva of *suppressalis* bores into the stem of rice. Fletcher and Ghosh (1920 : 390, pls 57, 58) gave detailed study of the biology and immature stages of this species in India under the name ' Rice *Chilo* '. The full bibliography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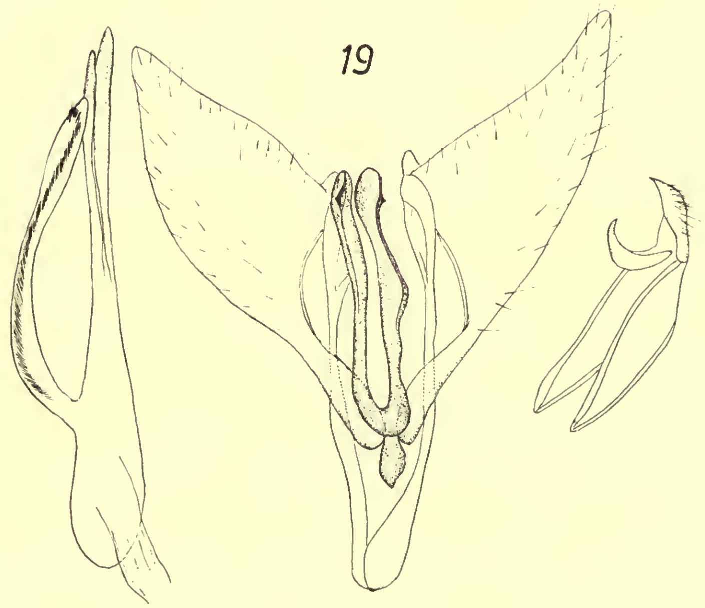
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FIGS 18–19. *Chilo*, ♂ genitalia. 18, *suppressalis*, Manchuria. 19, *hyrax*, Ussuri, holotype.

of the literature dealing with biology and control of *suppressalis* is found in Jepson, 1954 and Katiyar, 1964.

Distribution. Spain ; China ; Korea ; Japan, Honshu, Hokkaido, Shikoku, Kyushu ; Formosa ; Malaya ; Indonesia ; India ; Hawaii. In Spain and probably also in Hawaii *suppressalis* was presumably introduced by man. In East Asia *suppressalis* occurs in some places together with allied *hyrax* and *christophi*.

C. suppressalis is similar to *hyrax* and *christophi*, but is generally smaller and has often a more distinct pattern of the fore wing. The ground-colour of the fore wing is generally yellow, being more greyish in *suppressalis*. However, many females of *suppressalis* are also yellow. The male genitalia of three species are distinct. The female genitalia are, however, much less diagnostic. The ostial pouch of *suppressalis* is generally much smaller than that in *christophi*, and the swelling of the ductus bursae in *hyrax* is larger than in *suppressalis*.

C. suppressalis has for a long time been recorded from the Near East as '*Chilo simplex*', but all these records are referable to *agamemnon*. So far I have found no specimen of *suppressalis* from Near East.

Type material examined. *suppressalis*. Holotype ♀. '[China] Shanghai, 58.60', GS-2742-BM, in BM(NH).

simplex. Lectotype ♂. (Selected by Bleszynski, 1965 : 109). 'Formosa, 80.115.204 ; *Jartheza simplex* ♂ Butler, Type', GS-2743-BM ; 1 ♂ paralectotype, Formosa, GS-13017-BM, in BM(NH).

oryzae. Holotype ♀. '1.ii. Rice stubble, Pusa no. 1677.A.', abdomen missing, in BM(NH).

Other material. SPAIN : 3 ♂, in Naturhistorisches Museum, Vienna. USSURI : Vinogradovka, 34 ex. in Zoologitscheskij Institut, Leningrad ; CHINA : Kiangsu, Szetschwan, Shantung, Kwangtung and Fukien, 35 ex. in Muzeul G. Antipa, Bucharest, A. Koenig Museum, Bonn, Canadian National Collection, Ottawa, Ont., Canada and author's coll. ; SUMATRA : 2 ♀ in BM(NH) ; CELEBES : Goa, Malino, 1 ♀, in BM(NH) ; JAPAN : Honshu, Kyushu, Shikoku, v–ix, in BM(NH) and in author's coll. ; HAWAII : 80 ex. in United States National Museum, Washington, D.C., U.S.A.

Chilo hyrax Bleszynski

(Pl. 3, figs 6, 7 ; Text-figs 19, 20)

Chilo hyrax Bleszynski, 1965 : 108, fig. 57 [head], pl. 4, figs 57–1, 2 [adults], pl. 41, fig. 57 [♂ genitalia], pl. 93, fig. 57 [♀ genitalia].

Similar to *suppressalis*, but generally larger : length of fore wing, 12·0–16·5 mm ; ground-colour of fore wing yellow to brown, variably dusted with brown scales ; subterminal line reduced ; median line marked by row of brown specks, or completely reduced ; metallic scales absent.

♂ genitalia (Text-fig. 19) : similar to those in *suppressalis* but distinguished by the different shape of juxta-plate, the arms of which are narrower, not dilated in the middle ; in addition, subapical teeth present.

♀ genitalia (Text-fig. 20) : ostial pouch small, well demarcated from ductus bursae ; the latter distinctly swollen, not twisted, with distinct, heavily sclerotized, elongate patch ; signum much larger than in *suppressalis* and *christophi*.

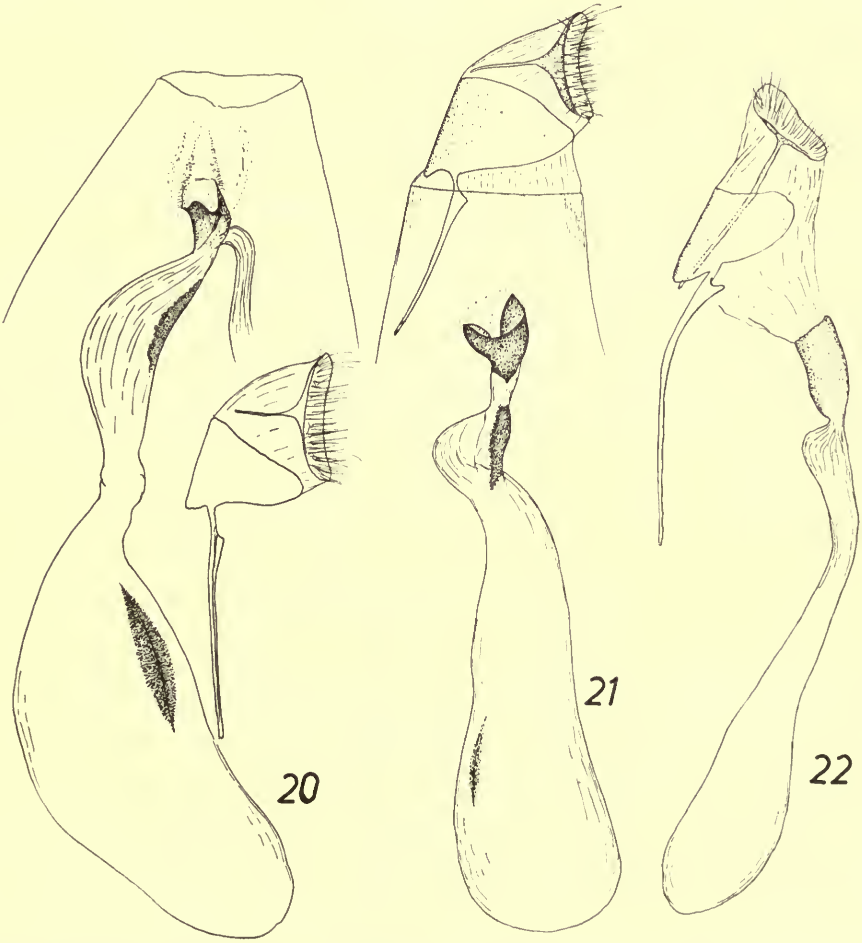
Early stages and biology unknown.

Distribution. China, Mokanshan and Manchuria ; Russia, Ussuri ; Japan, Honshu.

Type material examined. Holotype ♂. ' Ussuri ', GS-3086-SB, in author's coll.

Paratypes : Manchuria, Djalantun, 2 ♀, GS-901-SB and GS-2946-SB, in author's coll. ; Ussuri, Jakovlevka, 5 ♀, GS-2404-SB and GS-2411-SB, in Zoologitscheskij Institut, Leningrad ; Ussuri, Kasakewitsch, 2 ♀, GS-2407-SB and GS-1709-SB, in Muzeul G. Antipa, Bucharest.

Other material. CHINA : Ussuri, Kasakewitsch, 1 ♀, in author's coll. ; Manchuria,



FIGS 20–22. *Chilo*, ♀ genitalia. 20, *hyrax*, Manchuria. 21, *christophi*, Ussuri, paratype. 22, *pulverosellus*, Syria, holotype.

Hsiaoling, 1 ♀, in author's coll. ; Mokanshan, 1 ♀ in Muzeul G. Antipa, Bucharest ; JAPAN : Honshu, Kinku-Osaka, 1 ♀ in Canadian National Collection, Ottawa, Ont., Canada.

Chilo christophi Bleszynski

(Pl. 3, figs 8, 9 ; Text-figs 21, 23)

Chilo concolorellus Christoph, 1885 : 149 [in part].
Chilo christophi Bleszynski, 1965 : 112, pl. 4, figs 59–1, 2 [adults], pl. 42, fig. 59 [♂ genitalia], pl. 93, fig. 59 [♀ genitalia].
Chilo antipai Popescu-Gorj, 1968 : 845, figs 7 and 8 [head] 9 [♂ genitalia], 10 [♀ genitalia], pl. 1, figs 1–3 [adults]. **Syn. n.**

Similar to *suppressalis* but much larger and with pattern of fore wing less distinct. Length of fore wing, 14·0–19·0 mm.

♂ genitalia (Text-fig. 23) : as in *suppressalis* except for juxta-plate, the arms of which are stouter and not dilated, without distinct subapical teeth.

♀ genitalia (Text-fig. 21) : ostial pouch usually larger than in *suppressalis*.

The examined specimens were taken in May and June.

Distribution. Russia, South Ural and Armenia, Central Asia, Ussuri ; North China. The range of *christophi* overlaps that of *suppressalis* and *hyrax* in Ussuri.

Type material examined. Holotype ♀. ' Ussuri Baranovka, Hed., *concolorellus* ', GS-2408-SB, in Zoologitscheskij Institut, Leningrad.

Paratypes : Ussuri, Chabarovka, 1 ♀, GS-2407-SB ; Ussuri, Winogradovka, 1 ♀, GS-2654-SB ; Ussuri, Lake Chaicha, 1 ♀, GS-2410-SB ; Ussuri, Frolovka, 1 ♂, GS-2412-SB, in Zoologitscheskij Institut, Leningrad ; China, Tsingtao, 1 ♂, GS-818-Toll ; Manchuria, Yablonya, 1 ♂, GS-890-SB ; Thian-Shan, 1 ♀, GS-2413-SB, in author's coll. ; Central Asia, Kuldja, 1 ♀ ; South Ural, Uralsk, 2 ♀, GS-1667-SB, in Muzeul G. Antipa, Bucharest ; Central Asia, Issyk-Kul, 1 ♀, in Naturhistorisches Museum, Vienna.

Other material. JAPAN : ' Japan ', 1 ♂, in BM(NH).

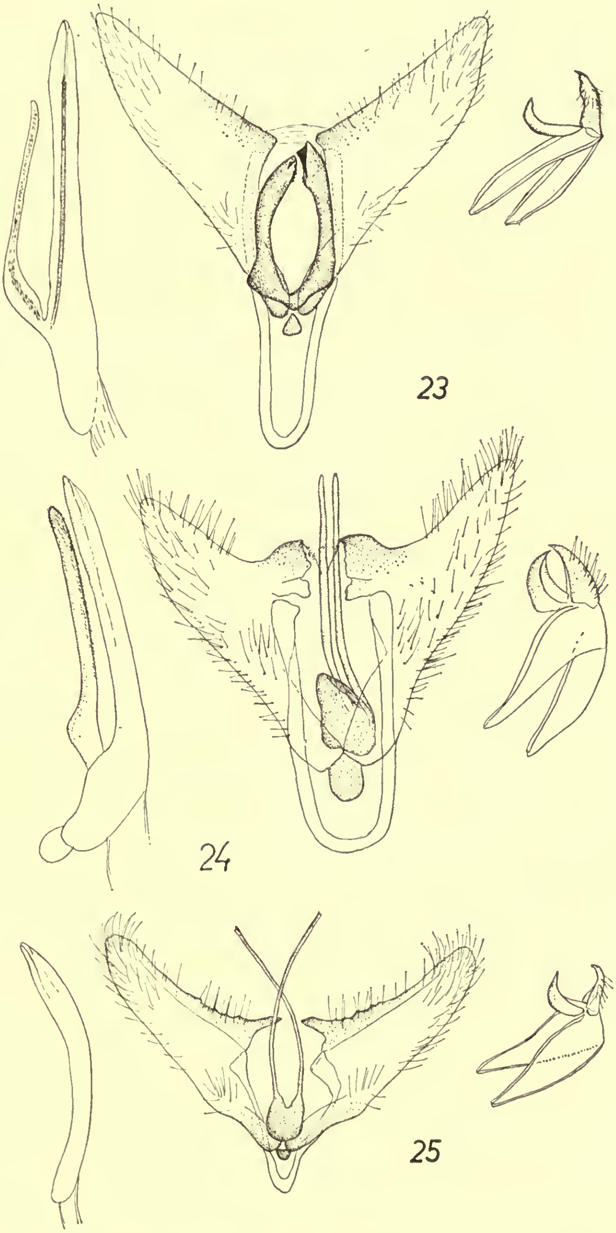
Chilo pulverosellus (Ragonot)

(Pl. 1, fig. 1 ; Text-figs 22, 25)

Chilo pulverosellus Ragonot, 1885 : xcviii.
Chilo brevipalpellus Zerny, 1914 : 303, pl. 25, fig. 6 [syn. Bleszynski, 1962*b* : 109).
Eschata fernandezi J. de Joannis, 1932 : 192 [syn. Bleszynski, 1962*b* : 109].
Chilo lemarchandellus D. Lucas, 1945 : 7 [syn. Bleszynski, 1962*b* : 109].
Chilo pulverosellus Ragonot ; Bleszynski, 1965 : 115, pl. 4, figs 61–1, 2, pl. 42, fig. 61 [♂ pl. 93, genitalia], pl. 93, fig. 61 [♀ genitalia].

Ocellus well developed. Face broadly rounded, moderately protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 2 (♂) to 2·5 (♀) times as long as diameter of eye. Fore wing : length 11·0–13·0 mm ; R_1 free ; white to cream, variably dusted with brown scales ; some specimens with indistinct longitudinal brown lines along veins ; some females almost unicolorous white ; subterminal line ill-defined or absent ; median line absent or ill-defined ; discal dot absent or indistinct ; metallic scales absent. Hind wing silky white to cream.

♂ genitalia (Text-fig. 25): pars basalis weak; arms of juxta-plate very long and thin; each arm provided with heavily sclerotized strengthening ending in minute tooth; cornuti absent; basal projection and ventral arm both absent.



Figs 23–25. *Chilo*, ♂ genitalia. 23, *christophi*, China, Prov. Shantung, paratype. 24, *vergilius*, India, Bombay, holotype. 25, *pulverosellus*, Jordan, holotype of *brevipalpellus*.

♀ genitalia (Text-fig. 22) : eighth tergum long ; ostial pouch long, rather well demarcated from ductus bursae ; signum absent.

The larva was found to be a pest of maize (Bodenheimer, 1930 : 310 ; Kuznetsov, 1960 : 51). The adults are on the wing from May till August. The species probably has two or three generations a year.

Distribution. South France ; Bulgaria ; Russia, Ukraine, Daghestan, Transcaucasus, Buchara, Transcaspia ; Turkey ; Israel ; Syria.

Type material examined. *pulverosellus.* Holotype ♀. ' Syrie ', GS-3648-Viette, in Muséum National d'Histoire Naturelle, Paris.

brevipalpellus. Holotype ♂. ' Jordan-Nutzdorf ', GS-9034-Mus. Vind., in Naturhistorisches Museum, Vienna.

fernandezi. Holotype ♀. ' [France] Trinquetaille, 18.8.31 ', GS-3615-Viette, in Muséum National d'Historie Naturelle, Paris.

lemarchandellus. Lectotype ♀ (selected by Bleszynski, 1965 : 116). ' [France] Herault, St. Guilhem-le-Desert, 20.–30.7.1945 ', GS-3649-Viette, in Muséum National d'Historie Naturelle, Paris ; 1 ♀ paralectotype, same locality and same coll.

Other material. BULGARIA : Nessebar, viii, 1 ♂, in author's coll. TURKEY : Anatolia, 4 ♀, in BM(NH) ; SYRIA : 1 ♂, 1 ♀, in Naturhistorisches Museum, Vienna ; ISRAEL : Jordan Valley, 1 ♂, in author's coll.

Chilo partellus (Swinhoe)

(Pl. 1, figs 2, 3 ; Pl. 3, fig. 13 ; Text-figs 7, 26, 28)

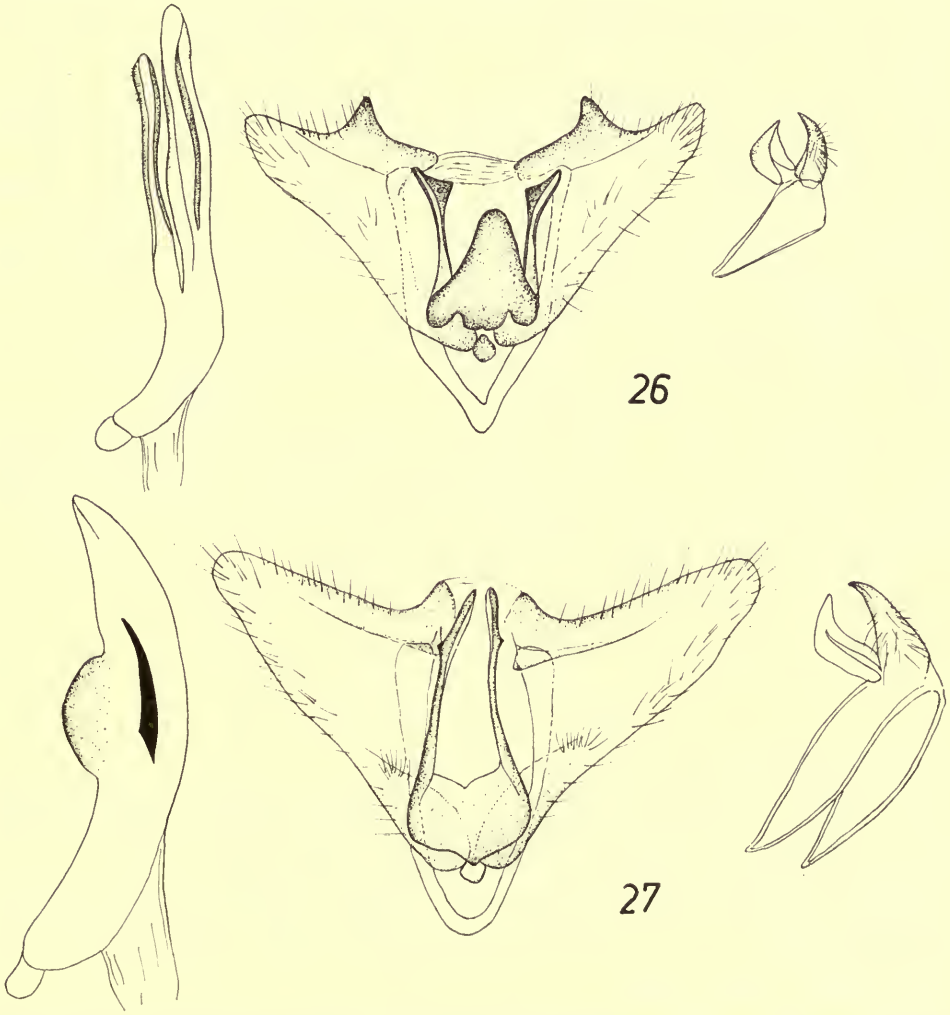
Crambus zonellus Swinhoe, 1884 : 528, pl. 48, fig. 16 [preoccupied by *Crambus zonellus* Zeller, 1847 ; syn. Hampson, 1896*a* : 957 ; Bleszynski & Collins, 1962 : 243].
Crambus partellus Swinhoe, 1885 : 879.
Chilo simplex (Butler) ; Hampson, 1896*a* : 957 [in part].
Chilo simplex (Butler) ; Hampson, 1896*b* : 26 (mis-identification].
Chilo simplex (Butler) ; Rebel, 1901 : 259 [in part].
Diatraea calamina Hampson, 1919 : 544 [in part].
Chilo simplex (Butler) ; Fletcher & Ghosh, 1920 : 285, pls 45–47 [early stages].
Chilo zonellus (Swinhoe) Fletcher, 1928 : 58.
Argyria lutulentalis Tams, 1932 : 127, pl. 4, figs 6, 7 [syn. Martin, 1954 : 120].
Chilo zonellus (Swinhoe) ; Gupta, 1940 : 806, pl. 36, fig. 4 a, b [wing venation], pl. 37, figs 7, 8 [♂ genitalia], text-fig. 5 [larva].
Chilo zonellus (Swinhoe) ; Isaac & Venkatraman, 1941 : 810, pl. 46, fig. 4 [pupa], pl. 49, figs 1–3 [pupa].
Chilo zonellus (Swinhoe) ; Isaac & Venkatraman, 1941 : 801, pl. 42, fig., pl. 43, fig., pl. 45, fig [larva].
Chilo zonellus (Swinhoe) ; Kapur, 1950 : 399, pl. 1, fig. 8 [head], pl. 2, fig. 3 (♂ genitalia], pl. 3, figs 2, 8 [♂ genitalia], 15 (♀ genitalia].
Chilo partellus (Swinhoe) Bleszynski & Collins, 1962 : 243.
Chilo partellus (Swinhoe) ; Bleszynski, 1965 : 119, figs 63–1, 2 [larva and pupa], pl. 5, figs 63–1, 2 [adults], pl. 42, fig. 63 [♂ genitalia], pl. 94, fig. 63 [♀ genitalia].

Ocellus well developed. Face distinctly conical, with distinct corneous point ; ventral ridge slight. Labial palpus 3 (♂) to 3·5 (♀) times as long as diameter of eye. Fore wing : length 7·0–17·0 mm ; R_1 free ; ground-colour varying from yellow to brown, variably dusted with fuscous scales ; subterminal line a delicate brown line ; median line ill-defined ; discal dot present ; metallic scales absent. Hind wing dirty white to grey.

♂ genitalia (Text-fig. 26) : costa with median, strong, tapering projection ; juxta-plate symmetrical, with large central part, projected caudad, base with two notches ; arms stout, not extending beyond costa of valva, each with a strong sub-apical tooth ; adeagus with bulbose basal projection and ventral arm.

♀ genitalia (Text-fig. 28) : ostial pouch very heavily sclerotized ; delicately longitudinally wrinkled ; well demarcated from ductus bursae ; deeply notched caudally ; signum lamellate with median ridge.

The larva of *partellus* is a notorious pest of maize, sorghum and rice, but also attacks sugar-cane when it is grown in the neighbourhood of infested rice or maize



Figs 26–27. *Chilo*, ♂ genitalia. 26, *partellus*, Afghanistan. 27, *infuscatellus*, Central Asia, Tadzhikistan, lectotype of *tadzhikiellus*.

fields. Ingram (1959) listed the following host plants of *partellus* in Uganda : *Hyparrhenia rufa, Rottboelia compressa, Saccharum officinarum, Sorgum vulgare, S. verticilliflorum, Vossia cuspidata, Eleusine coracana, Zea mays, Oryza sativa, Pancum maximum,* and *Pannisetum purpureum.* For details on the biology and early stages of *partellus* see Fletcher and Ghosh (1920 : 385, ' *Chilo simplex* ') and Gupta (1940). The descriptions of the larva and the pupa were given by Isaac and Rao (1941) (larva) and Isaac and Venkatraman (1941) (pupa).

Hampson (1896*a*, 1896*b*) regarded *partellus* and *zonellus* as synonyms of *simplex* (= *suppressalis*). Only Fletcher (1928) considered *simplex* and *zonellus* as distinct species.

Judging by the female genitalia, *partellus* is close to *tamsi* (♂ of *tamsi* is unknown). *C. tamsi* is easily separable from *partellus* by much smaller ostial pouch, which is elongate being rounded in *partellus*.

Distribution. Afghanistan ; India ; West Pakistan ; Sudan ; Uganda ; Tanzania ; Malawi ; Comores Is. Detailed data on the distribution of *partellus* in Africa are given by Ingram (1948) and Williams (1959).

Type material examined. *zonellus*. LECTOTYPE ♂ (present designation). ' [Pakistan] Kurrachee, 5.80 ', GS-4215-BM, in BM(NH).

partellus. Lectotype ♂ (selected by Bleszynski, 1965 : 119). ' [India] Poona, 87–88 (1148).10.82 ', GS-4216-BM, in BM(NH). Paralectotypes. 12 ex. from Poona and Bombay, India.

lutulentalis. Holotype ♀. ' Z.2311.1500 ft. Ft. Johnston, Nyasaland H. 14.iv. 1929 ♀ C. Smee ', GS-1371-BM, in BM(NH).

Other material. INDIA : Khasis, Nilgiris, Bombay, Sikkim, Coimbatore, Mean Meer, 25 ex., in BM(NH) ; AFGHANISTAN : Sarobi, 6 ex., in coll. Amsel, Karlsruhe ; SUDAN : Ed Damar, 5 ex. 31.x, in Zoologische Sammlung d. Bayerischen Staates, Munich and in author's coll. TANZANIA : 2 ♀ in author's coll. ; COMORES Is. : 5 ♀ in Muséum National d'Historie Naturelle, Paris.

Chilo tamsi Kapur

(Pl. 5, fig. 1 ; Text-fig. 29)

Chilo tamsi Kapur, 1950 : 400, pl. 3, fig. 14 [♀ genitalia].

Ocellus small. Labial palpus 3·5 times as long as diameter of eye (♀). Face conical, pointed, without ventral ridge. Fore wing length 19·0 mm ; R_1 free ; ground-colour light straw-yellow with very sparse, irregular sprinkling of brown to dark brown scales and with a distinct discal dot ; transverse lines absent. Hind wing white.

♀ genitalia (Text-fig. 29) : ostial pouch much elongate and heavily sclerotized, tubular, deeply incised ; ductus bursae distinctly swollen in caudal part ; signum sub-rectangular bearing median ridge.

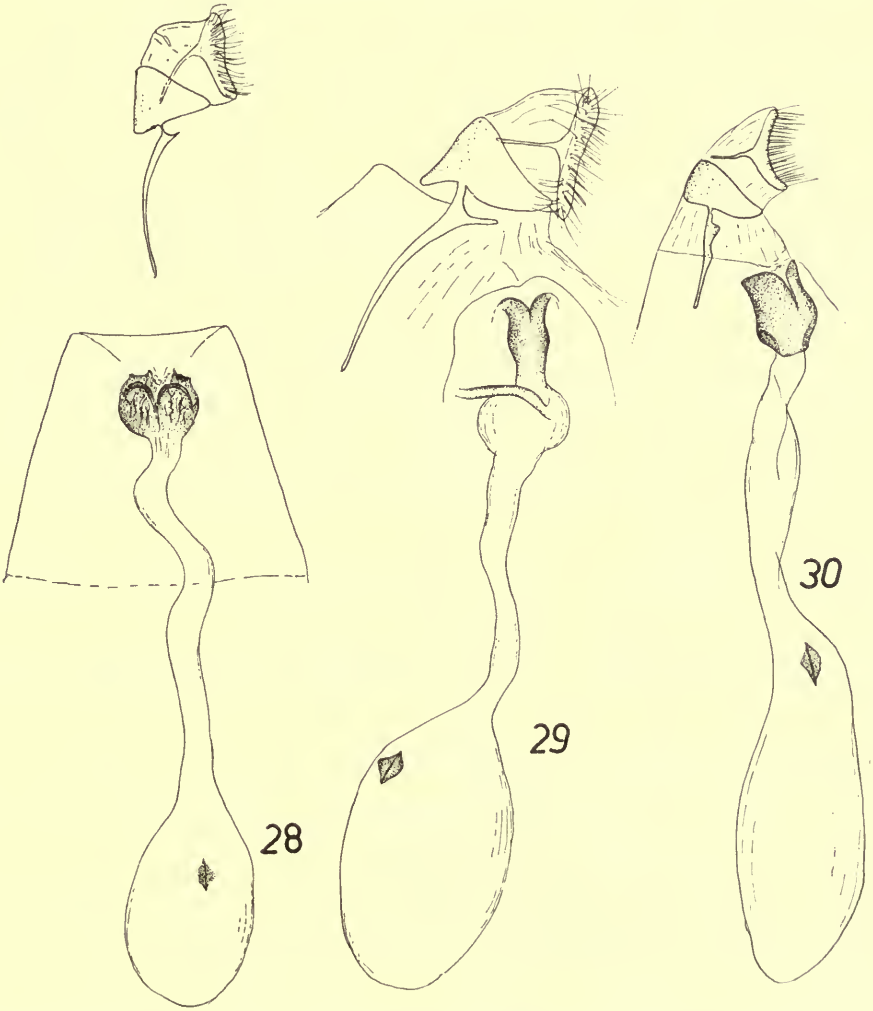
Distribution. South India.

Type material examined. Holotype ♀. ' [India] : Travancore, Peermade, Mrs Imray, 1904–226 ', GS-617-BM, in BM(NH).

Chilo infuscatellus Snellen

(Pl. 3, figs 10–12 ; Text-figs 6, 27, 30)

Chilo infuscatellus Snellen, 1890 : 94, pl. 1, figs 5–8.
Argyria sticticraspis Hampson, 1919 : 449 [syn. Kapur, 1950 : 404].
Argyria coniorta Hampson, 1919 : 449 [syn. Fletcher, 1928 : 58].
Diatraea calamina Hampson, 1919 : 544 [syn. Kapur, 1950 : 404].
Diatraea auricilia (Dudgeon) Fletcher & Ghosh, 1920 : 387, pl. 48, fig. 1 [larva], 2 [pupa], pl. 49, fig. 1 [egg], 4 [life-cycle].
Argyria sticticraspis Hampson ; Fletcher, 1928 : 50.
Chilo infuscatellus Snellen ; Shibuya, 1928*b* : 54.
Argyria sticticraspis Hampson ; Gupta, 1940 : 788, fig. 1 [larva], pl. 36, fig. 1 [wing venation],



Figs 28–30. *Chilo*, ♀ genitalia. 28, *partellus*, Ethiopia. 29, *tamsi*, India, holotype. 30, *infuscatellus*, Central Asia, Tadzhikistan, paralectotype of *tadzhikiellus*.

pl. 37, figs 1, 2 [♂ genitalia].

Diatraea shariinensis Eguchi, 1933 : 3, 19, pl. 1 [syn. Kapur, 1950 : 404].

Argyria sticticraspis Hampson : Isaac & Rao, 1941 : 799, 802, pls 42, 43, 45 [larva].

Argyria sticticraspis Hampson ; Isaac & Venkatraman, 1941 : 806, 814, pl. 46, fig. 2 [pupa].

Chilo tadzhikiellus Gerasimov, 1949 : 704, figs 1 [wing-venation], 2 [head], 3 [♂ genitalia], 4 [♀ genitalia], 5, 6 [larva] [syn. Bleszynski, 1962*b* : 111].

Proceras infuscatellus (Snellen) Kalshoven, 1950 : 413, fig. 234 [pupa].

Chilotraea infuscatellus (Snellen) Kapur, 1950 : 404, pl. 1, fig. 2 (head), pl. 4, figs 1–4 [♂ genitalia], 5 [♀ genitalia].

Chilo infuscatellus Snellen ; Bleszynski, 1962*b* : 111, figs 4 [♂ genitalia], 20 [♀ genitalia].

Chilo infuscatellus Snellen ; Bleszynski, 1965 : 116, figs 62 [head], 62 [larva and pupa], pl. 5, fig. 62 [adult], pl. 42, fig. 62 [♂ genitalia], pl. 94, fig. 62 [♀ genitalia].

Chilo infuscatellus Snellen ; Bleszynski, 1969 : 15, figs 3 [♂ genitalia], 36 [♀ genitalia].

Ocellus well developed. Labial palpus 3 (♂) to 3·5 (♀) times as long as diameter of eye. Face rounded, slightly protruding forward beyond eye. Fore wing : length 10·0–13·0 mm ; R_1 confluent with Sc ; ground-colour and maculation very variable, dull, from light sand-yellow to chocolate-brown ; discal dot present or variably reduced ; transverse lines present or absent ; terminal dots present ; metallic scales absent. Hind wing dirty white (♂) to silky white (♀).

♂ genitalia (Text-fig. 27) : pars basalis slight ; juxta-plate symmetrical, arms reaching the basal-costal angle of valva ; each arm provided with a toothed strengthening ; aedeagus with strong ventral swelling ; a single, tapering, curved, large cornutus present.

♀ genitalia (Text-fig. 30) : ostial pouch well demarcated from ductus bursae, heavily sclerotized, deeply incised anteriorly ; signum lamellate with median ridge.

C. infuscatellus is a serious pest of sugar-cane, but also attacks juar (*Andropogon sorghum*), rarhi and batri (*Saccharum spontaneum*), ikri (*Saccharum fuscum*) and Jove grass (*Rottboelia compressa*). The details on the biology of *infuscatellus* are found in papers of Fletcher and Ghosh (1920), Fletcher (1928) and others (see bibliography of *Chilo*, Katiyar, 1964). The larva and pupa have been described by Eguchi (1933), Isaac and Roa (1941), and Isaac and Venkatraman (1941).

Three female syntypes of *calamina*, from Cownpur, Mogla Serai and Pusa, India are referable to *partellus*.

Distribution. Afghanistan ; India ; Upper Burma ; Formosa ; Tadzhikistan, Central Asia ; Java ; Timor ; Philippine Is. ; Vulcan Is.

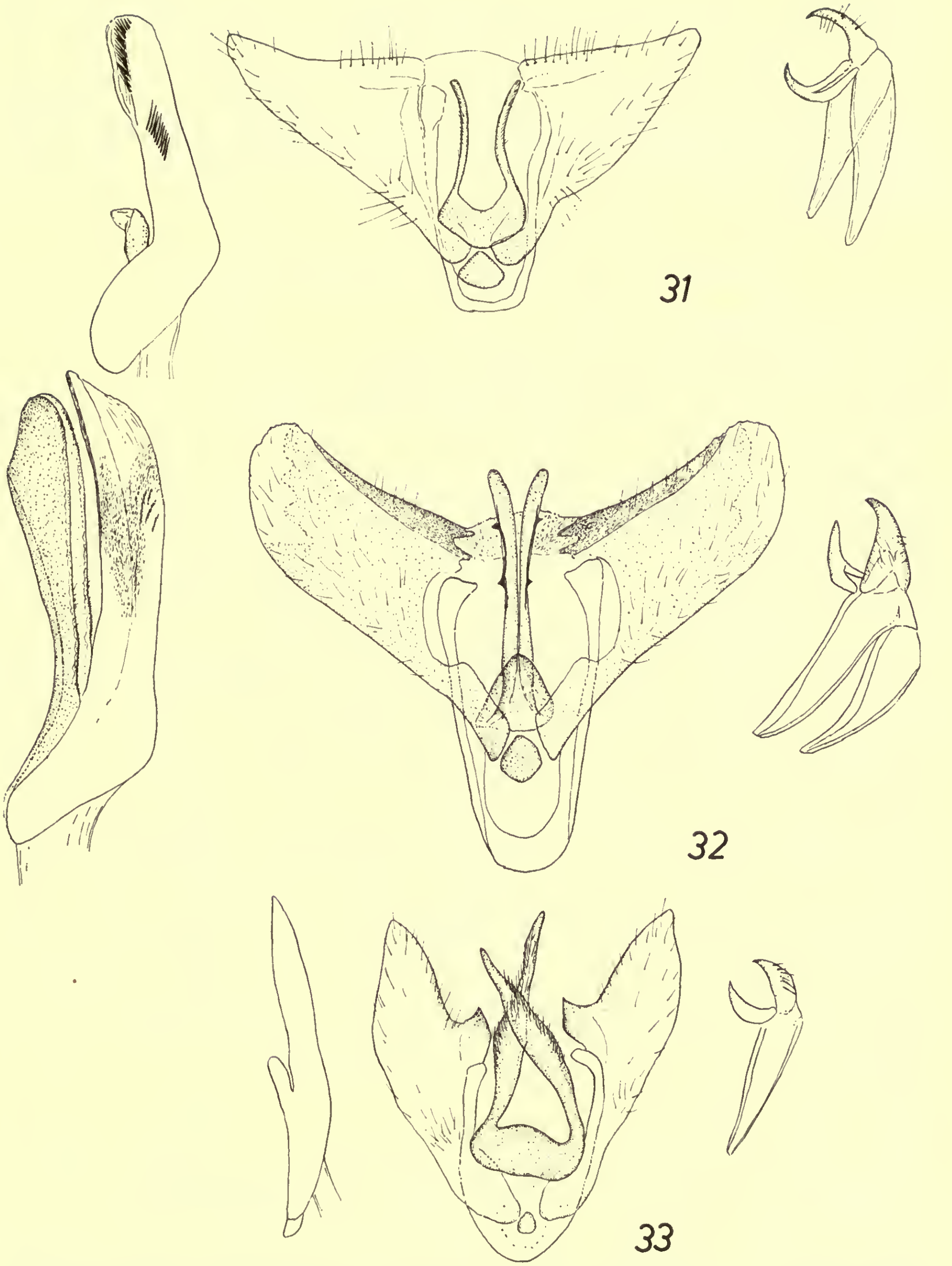
Type material examined. *infuscatellus*. Lectotype ♂ (selected by Munroe, Diakonoff and Martin, 1958). ' Java ', in Museum van Natuurlijke Historie, Leiden.

sticticraspis. Holotype ♀. ' S. India, Coimbatore, 4.ii.1912, T.B. Fletcher, 1915–208 ', GS-2181-BM, in BM(NH).

coniorta. LECTOTYPE ♂ (present designation). ' Bengal, Behar, Pusa, 1915–48, Sugar cane ', GS-2182-BM ; 1 ♂ paralectotype, same locality, taken on 11.iii.1914, abdomen missing, in BM(NH).

calamina. LECTOTYPE ♀ (present designation). ' Kinuya, Upper Burma, 23.ix.1900, coll. Bingham, 1901–157 ' ; 4 ♀ lectoparatypes, same data, GS-13014-BM and GS-13015-BM, in BM(NH).

shariinensis. Lectotype ♀ (selected by Bleszynski, 1965 : 116). ' Korea-Shariin, 22.vii.1929, M. Eguchi, Brit. Mus. 1931–372 ' ; 2 ♀ paralectotypes, same data, different dates ; abdomens missing, in BM(NH).



FIGS 31–33. *Chilo*, ♂ genitalia. 31, *pulveratus*, China, Chungking. 32, *tumidicostalis*, India. 33, *bandra*, India, holotype.

tadzhikiellus. Lectotype ♂ (selected by Bleszynski, 1965 : 117). Central Asia, Tadzhikistan, GS-417-Leningrad [specimen missing, ? lost, slide present] ; genitalia slide of 1 ♀ paralectotype ; in Zoologitscheskij Institut, Leningrad.

Other material. AFGHANISTAN : Polichomri and Sarobi, 700–1100 m, 5.vi.–3.vii.1956, 7 ♀ in coll. Amsel, Karlsruhe ; INDIA : Coimbatore, 3 ♀, in BM(NH) ; TIMOR : 1 ♀, in BM(NH) ; FORMOSA : 1 ♂ 1 ♀, 19.iii.1931, in BM(NH) ; 2 ♂ in author's coll. ; PHILIPPINES : Luzon, Klondyke, 1 ♀, in BM(NH) ; VULCAN Is., 6 ♀ in BM(NH).

Chilo pulveratus (Wileman & South)
(Pl. 2, fig. 9 ; Pl. 4, figs 11, 12 ; Text-figs 7, 31, 34)

Diatraea pulverata Wileman & South, 1917 : 147.
Diatraea pulverata Wileman & South ; Shibuya, 1928*b* : 51.
Chilo pulverata (Wileman & South) Bleszynski, 1962*b* : 115.
Chilo izuensis Okano, 1962 : 123, pl. 6, fig. 6 [♂ genitalia]. **Syn. n.**.
Chilo izouensis (Okano) ; Bleszynski, 1965 : 115, pl. 5, fig. 60 [adult], pl. 42, fig. 60 [♂ genitalia] [mis-spelling].

Ocellus well developed, slightly variable in size. Face broadly rounded without point. Labial palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : length 8·0–10·5 mm ; R_1 confluent with *Sc* ; ground-colour light yellowish cream dusted with brown scales ; pattern brown ; subterminal line well marked ; in specimens from the Philippines distinctly dentate and edged with silvery scales proximally ; in Formosan specimen a dark line without metallic scales ; discal dot indistinct ; median line traceable, with metallic scales in Formosan specimens ; terminal dots distinct ; fringe glossy. Hind wing whitish.

♂ genitalia (Text-fig. 31) : juxta-plate symmetrical, arms thin, moderate in length, hairy, rather excurved, without subapical teeth ; aedeagus with short ventral arm (hairy in Formosan specimens) ; a subapical long patch of thorns in aedeagus ; numerous rather small cornuti arranged in an elongate patch ; bulbose basal projection absent.

♀ genitalia (Text-fig. 34) : ostial pouch elongate, rather heavily sclerotized ; two distinct lamellate signa with median ridges.

This species shows considerable variation in size and coloration. *C. izuensis* was described from a single ♂. Because of an inaccurate diagnosis (Okano mentioned ' cornutus wanting ') I have hitherto considered *izuensis* as a distinct species. I have had no opportunity to examine the holotype. However, recently I have received from Dr H. Inoue, in whose possession is the type of *izuensis*, the photomicrographs, which proved to be identical with those of *pulveratus*. Consequently I regard *izuensis* as a junior synonym of *pulveratus*. The holotype of *izuensis* was taken in Japan, Central Honshu, Shizuoka Pref., Kamo-gun, Nashimoto, 29.–31.vii. 1957, leg. H. Inoue, in coll. Dr H. Inoue, Fujisawa, Japan.

Distribution. China, Szetschwan ; Japan, Honshu ; Formosa ; Philippines, Luzon ; Timor ; Sumatra.

Type material examined. *pulveratus*. Holotype ♂. ' Formosa, Kanshirei, 26.vii.1908, A. E. Wileman ', GS-13016-BM, Paratypes. Formosa, Koanania, 1 ♂, GS-7662-BM ; Formosa, Takow, GS-7046-NM ; all in BM(BH).

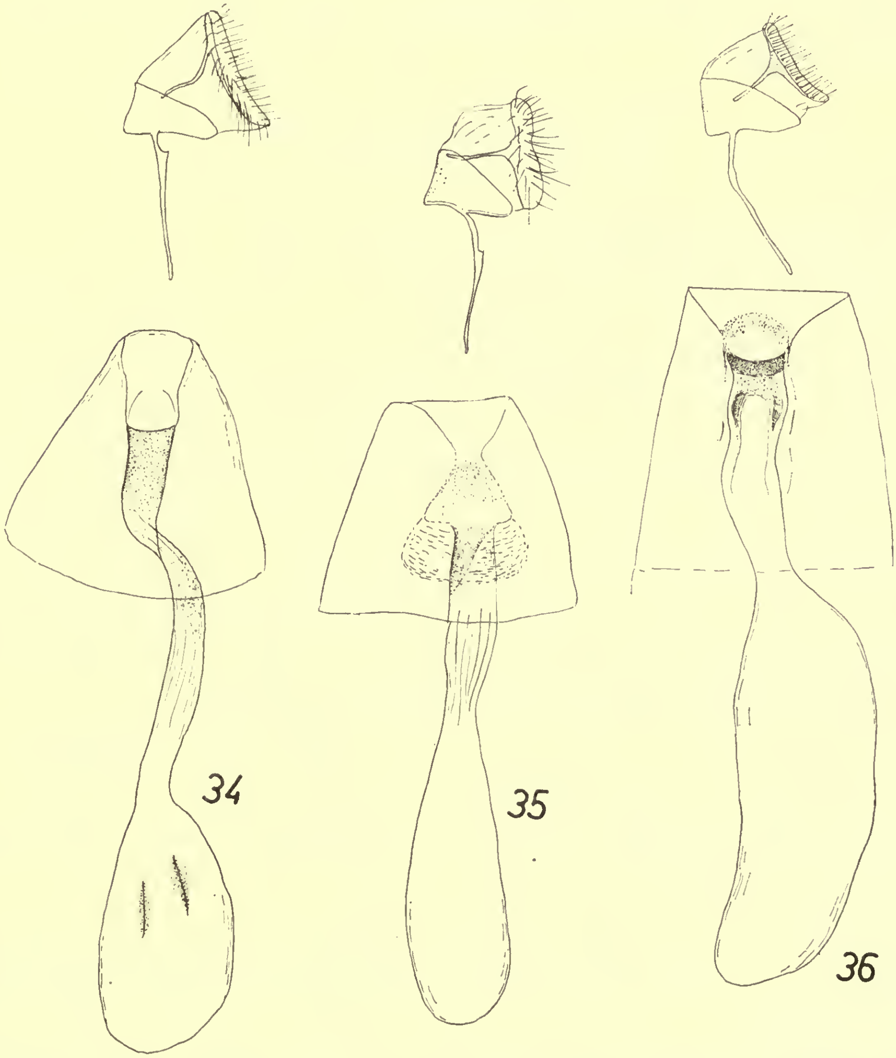
Other material. CHINA : Prov. Szetschwan, Chunking, 1 ♂, in BM(NH) ; PHILIPPINES : Luzon, Klondyke, 1 ♂ 1 ♀, in BM(BH) ; TIMOR : Oinanissa 1 ♀, in BM(NH) ; Oinanissa 1 ♀, in author's coll. ; SUMATRA : 1 ♀, in author's coll.

Chilo bandra (Kapur)

(Text-figs 33, 35)

Chilotraea bandra Kapur, 1950 : 407, pl. 5, figs 6–9 [♂ genitalia], 10 [♀ genitalia].
Chilo bandra (Kapur) Bleszynski & Collins, 1962 : 239.

Ocellus well developed. Face rounded, very slightly protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 2 (♂) to 2·5 (♀) times as long as diameter of eye. Fore wing : length 5·0–8·5 mm ; R_1 coincident with *Sc* ; ground-colour



FIGS 34–36. *Chilo*, ♀ genitalia. 34, *pulveratus*, Philippine Is, Luzon. 35, *bandra*, India, paratype. 36, *tumidicostalis*, India.

yellowish ; subterminal line edged with steely shiny scales ; median line yellow with patch of silvery scales ; area between lines longitudinally streaked with brown. Hind wing whitish.

♂ genitalia (Text-fig. 33) : basal proximal angle of valva produced and pointed ; juxta-plate with symmetrical, long, pointed, hairy arms ; aedeagus with short and thin ventral arm ; bulbose basal projection present.

♀ genitalia (Text-fig. 35) : genital opening surrounded by small rough, moderately sclerotized area; one small signum present.

Distribution. India, Bombay.

Type material examined. Holotype ♂. ' [India] : Bombay, Bandra, 20.vi.02 ', GS-7177-BM, in BM(NH).

Paratypes. 1 ♂, same data, GS-596-BM, in author's coll. ; 1 ♀, same data, GS-595-BM, in BM(NH).

Chilo tumidicostalis (Hampson)

(Pl. 1, fig. 7 ; Text-figs 32, 36)

Argyria tumidicostalis Hampson, 1919 : 448.
Chilo gemininotalis Hampson, 1919 : 59 [syn. Fletcher, 1928 : 59].
Chilo gemininotalis Hampson ; Fletcher, 1928 : 59.
Chilo tumidicostalis (Hampson) Kapur, 1950 : 401, pl. 1, fig. 5 [head], pl. 2, fig. 5 [♂ genitalia], pl. 3, figs 3, 9 [♂ genitalia], 11 [♀ genitalia].
Chilo tumidicostalis (Hampson) ; Bleszynski, 1969 : 14, figs 2 [♂ genitalia], 35 [♀ genitalia].

Ocellus well developed. Face moderately produced forward, with corneous point, which, in some specimens, is only poorly developed ; ventral ridge absent. Labial palpus 2·5 (♂) to 3·5 (♀) times as long as diameter of eye. Fore wing : length 9·0–10·5 mm ; R_1 free ; ground-colour dull grey to brown ; with dark shade from base to short distance beyond cell ; number of dark scales scattered irregularly over wing except on area immediately below longitudinal shade and along margin ; transverse lines absent ; terminal dots present, alternating with small white dots ; fringe shiny brown. Hind wing silky white.

♂ genitalia (Text-fig. 32) : valva with apex broadly rounded ; apical portion more heavily sclerotized than the remainder of the area ; costal portion densely clothed with minute hairs ; pars basalis absent ; juxta-plate symmetrical, arms long, apically rounded, each armed with strengthening, provided with two distinct, widely separated teeth ; ventral arm of aedeagus deeply notched, rounded, its dorsal margins clothed with minute hairs subapically and near base ; vesica with numerous tiny spikes, but without distinct cornutus.

♀ genitalia (Text-fig. 36) : ostium pouch poorly demarcated from ductus bursae, with heavily sclerotized caudal ring and two rather heavily sclerotized bars at sides ; signum absent.

C. tumidicostalis is reported to feed exclusively on sugar-cane. Descriptions of the larva and pupa are given by Fletcher and Ghosh (1920), Isaac and Rao (1941) and Isaac and Venkatraman (1941).

Distribution. India, Bengal and Assam ; Nepal.

Type material examined. *tumidicostalis*. LECTOTYPE ♂ (present designation). ' Bengal, Pabna, 8.ix.1911. 1915–408. Sugar cane stem. *Platytes tumidicostalis* Hampson type ♂ ', GS-618-BM ; 1 ♂ paralectotype, same data but taken on 11.ix., both in BM(NH).

gemininotalis. Holotype ♀. ' India Coll. 721. Kanny Coory Cachar. July '07. *Chilo gemininotalis* Hmps. ♀ type ', GS-619-BM, in BM(NH).

Other material. INDIA : Assam, 2 ♂, 1 ♀, in BM(NH) ; 1 ♂ in Canadian National Collection, Ottawa, Ont., Canada ; NEPAL : 1 ♀ in author's coll.

Chilo auricilius Dudgeon

(Pl. 2, fig. 6 ; Text-figs 38, 43)

Chilo auricilia Dudgeon, 1905 : 405.
Diatraea auricilia (Dudgeon) Fletcher, 1928 : 58.
Diatraea auricilia (Dudgeon) ; Gupta, 1940 : 799, fig. 3 [larva], pl. 36, fig. 2 [wing venation]. pl. 37, figs 3, 4 [♂ genitalia].
Chilotraea auricilia (Dudgeon) Kapur, 1950 : 408, pl. 5, figs 1–4 [♂ genitalia], 5 [♀ genitalia].
Chilo popescugorji Bleszynski, 1963 : 179, fig. 63 [♀ genitalia]. **Syn. n.**
Chilo auricilia Dudgeon ; Bleszynski & Collins, 1962 : 239.
Chilo auricilius Dudgeon ; Bleszynski, 1965 : 113, fig. 59 bis [larva and pupa], pl. 31, fig. 59 bis [imago], pl. 42, fig. 59 bis [♂ genitalia], pl. 93, fig. 59 bis [♀ genitalia].
Chilo auricilius Dudgeon ; Bleszynski, 1969 : 16, figs 4 [♂ genitalia], 37 [♀ genitalia].

Ocellus small but distinct. Face produced forward, smooth, or with small point; ventral ridge absent. Labial palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : length 8·0–13·0 mm, maximum width 3·0–4·0 mm ; R_1 confluent with *Sc* ; ground-colour yellow, in some instances brownish, variably irrorated with brown scales ; discal dot present ; subterminal line close to termen, represented by row of metallic scales ; median line concolorous with subterminal line ; few small silvery specks in middle of wing ; terminal dots large ; fringe shiny golden. Hind wing light brownish.

Coloration and pattern of fore wing is variable : in some specimens fore wing almost unicolorous yellow ; one examined specimen has very strongly developed silvery specks covering most of the wing surface ; sometimes the silvery specks are irregularly dispersed, while in other specimens they form two parallel transverse lines.

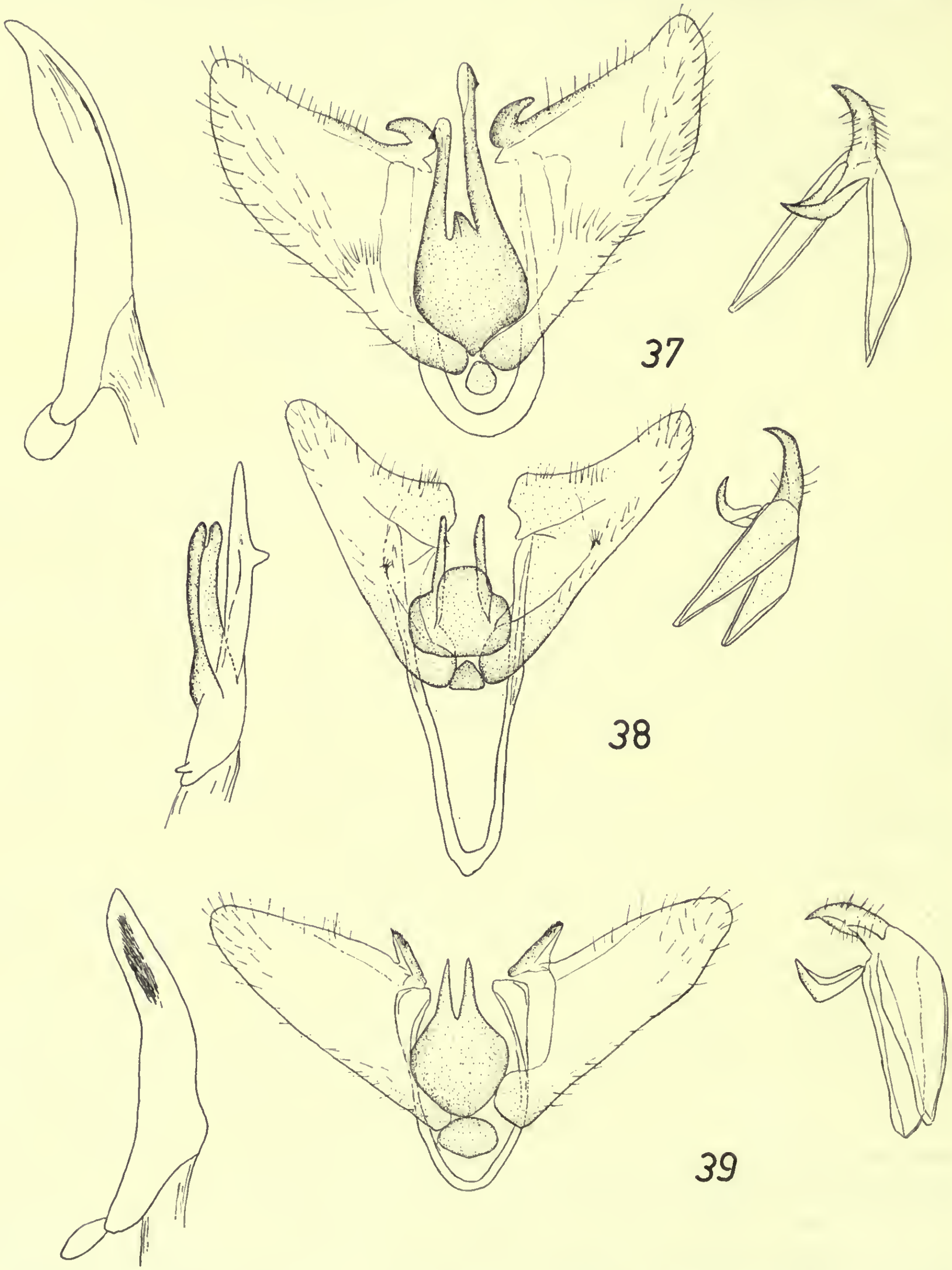
♂ genitalia (Text-fig. 38) : pars basalis absent ; saccus large ; juxta-plate with two symmetrical arms ending well before basal-costal angle of valva ; aedeagus with distinct, subapical conical projection ; ventral arm long, with notched apex ; bulbose basal projection small ; cornutus absent.

♀ genitalia (Text-fig. 43) : ostial pouch slightly demarcated from ductus bursae, moderately or heavily sclerotized ; small ; signum absent, but several examined specimens with a patch of scobinations or rather distinct irregularly shaped signum.

The life history of *auricilius* was dealt with by Fletcher and Ghosh (1920), (*Diatraea* sp., p. 389, pl. 55, fig. 1, larva, 2, pupa), Fletcher (1928) and Gupta (1940). The immature stages were figured by Isaac and Rao (1941 : 800, larva) and Isaac and Venkatraman (1941 : 809, pupa).

C. auricilius is a pest of sugar-cane in South-East Asia. It was also reported as feeding on rice, but the interpretation of the name *auricilius* has for a long time been in much confusion. Hampson (1912) sunk *auricilius* under *suppressalis*. Fletcher (1917) followed the Hampson synonymy, but in 1918 he regarded *auricilius* as a distinct species. However, in 1928, Fletcher stated that he made an error and that his '*auricilius*' was in fact '*Argyria sticticraspis*' (= *infuscatellus*). The true *auricilius* was named in Fletcher's paper as '*Diatraea* sp.'.

Distribution. India ; Nepal ; Formosa ; Philippines ; Thailand ; Indonesia, Moluccas, Celebes, Borneo, Sangir. The range of *auricilius* overlaps that of *polychrysus*, which is, in many instances, externally indistinguishable from *auricilius*. Both species are easily separable by the genitalia of both sexes.



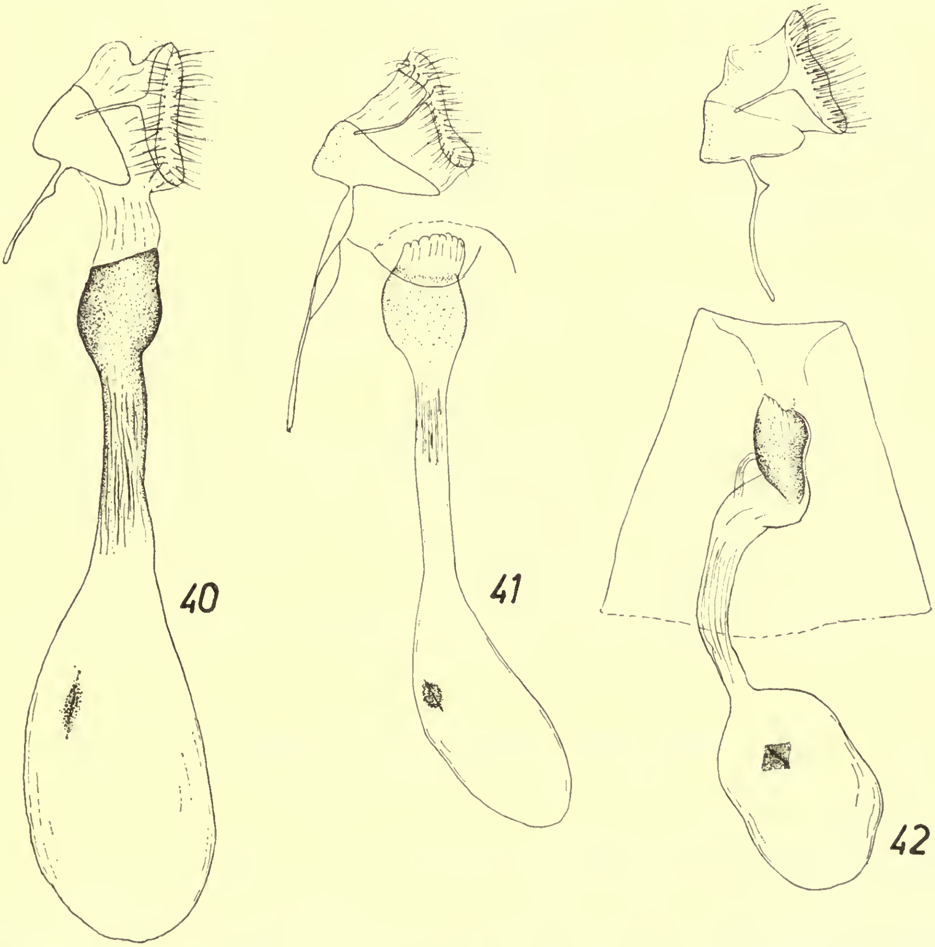
FIGS 37–39. *Chilo*, ♂ genitalia. 37, *ceylonicus*, Ceylon. 38, *auricilius*, Thailand. 39, *crypsimetallus*, Australia, Pt. Darwin, holotype.

Type material examined. *auricilius*. Holotype ♂. ' [India] Burogah N. Bihar (Mackenzie) ; Brit. Mus. 1905–70 ; *Chilo auricilius* type ♂ Dudgeon ', GS-8995-BM, in BM(NH).

popescugorji. Holotype ♀. ' Formosa ', GS-2043-SB, in Muzeul G. Antipa, Bucharest.

Paratypes, 3 ♀, same data, in Muzeul G. Antipa, Bucharest ; 1 ♀ paratype in author's coll.

Other material. INDIA : Pusa, 1 ♂, 3 ♀, in BM(NH) ; Darjeeling, 2 ♀, in Zoologische Sammlung d. Bayerischen Staates, Munich ; NEPAL : Rapti Tal, Megouli, 300 m, 29.iii.–4.iv., 5 ♀ ; Sunkosi, 2 ♀ ; Bhimpedi, 2 ♀, in Zoologische Sammlung d. Bayerischen Staates, Munich ; PHILIPPINES : Luzon, 2 ♂ in United States National Museum, Washington, D.C. ; MOLUCCAS : Ternate, 1 ♀, in BM(NH) ; CELEBES :



FIGS 40–42. *Chilo*, ♀ genitalia. 40, *ceylonicus*, China, Tongking, holotype of *torquatellus*, 41, *ceylonicus*, Ceylon. 42, *ceylonicus*, Hainan.

Paloe, 1 ♂, x, in BM(NH); Sangir : 1 ♀, in BM(NH) ; Borneo : Pulo Laut, 1 ♀, in BM(NH) ; Thailand : Krabi, 2 ♀, in Zoologische Sammlung d. Bayerischen Staates, Munich ; Krabi, 1 ♀, in author's coll.

Chilo ceylonicus Hampson

(Pl. 3, fig. 14 ; Text-figs 37, 40–42)

Chilo ceylonica Hampson, 1896*b* : 957.

Chilo torquatellus J. de Joannis, 1930 : 602, pl. 3, fig. 12. **Syn. n.**

Chilotraea ceylonicus (Hampson) Kapur, 1950 : 406, pl. 4, figs 6 [head], 7–9, 11 [♂ genitalia], 10 [♀ genitalia].

Chilo ceylonica Hampson ; Bleszynski & Collins, 1962 : 239.

Ocellus well developed. Face rounded, moderately protruding forward beyond eye ; cornous point and ventral ridge both absent. Labial palpus 3 (♂) to 3·5 (♀) times as long as diameter of eye. Fore wing : length 9·0–12·0 mm ; R_1 confluent with Sc ; ground-colour straw-yellow, beige or brown ; subterminal line silvery, without sub-dorsal tooth ; median line yellowish, edged with brown and silvery scales ; some scattered silvery scales in basal and medial areas ; holotype of *torquatellus* dark brown with median line reduced but rather distinct discal dot. Hind wing white to dirty white.

♂ genitalia (Text-fig. 37) : pars basalis small but distinct ; juxta-plate asymmetrical arms unequal in length, each arm with a subapical blunt knob ; aedeagus with bulbose basal projection but without ventral arm ; cornutus absent.

♀ genitalia (Text-figs. 40–42) : ostial pouch moderately or heavily sclerotized, rather variable in shape, well demarcated from ductus bursae, bulbose ; one lamellate signum with median ridge.

C. torquatellus is probably an extreme colour variation of *ceylonicus* and is here sunk under *ceylonicus*. It was described from a single ♀ from Tong-king. Biology of *ceylonicus* is unknown.

Distribution. Ceylon ; Tong-king ; Hainan.

Type material examined. *ceylonicus*. LECTOTYPE ♂ (present designation). ' Ceylon, 95–37 ; Hambantota ; *Eromene ceylonica* Type ♂ Hampson ', GS-586-BM ; 1 ♀ lectoparatype, same data, both in BM(NH).

torquatellus. Holotype ♀. ' Tong-king Phu-tho-far, Juillet ', GS-3655-Viette, in Muséum National d'Histoire Naturelle, Paris.

Other material. Ceylon : Hambantota, Hapusale, Gampola and Madulsima, 5 ex., in BM(NH) ; Hainan : 1 ♀, in author's coll.

Chilo crypsimetallus (Turner) **comb. n.**

(Pl. 5, fig. 2 ; Text-figs 39, 44, 45)

Nephalia crypsimetalla Turner, 1911 : 114.

Diatraea ochrileucalis Hampson, 1919 : 547. **Syn. n.**

Chilo ochrileucalis (Hampson) Bleszynski, 1962 : 19, figs 12 [♂ genitalia], 24 [♀ genitalia].

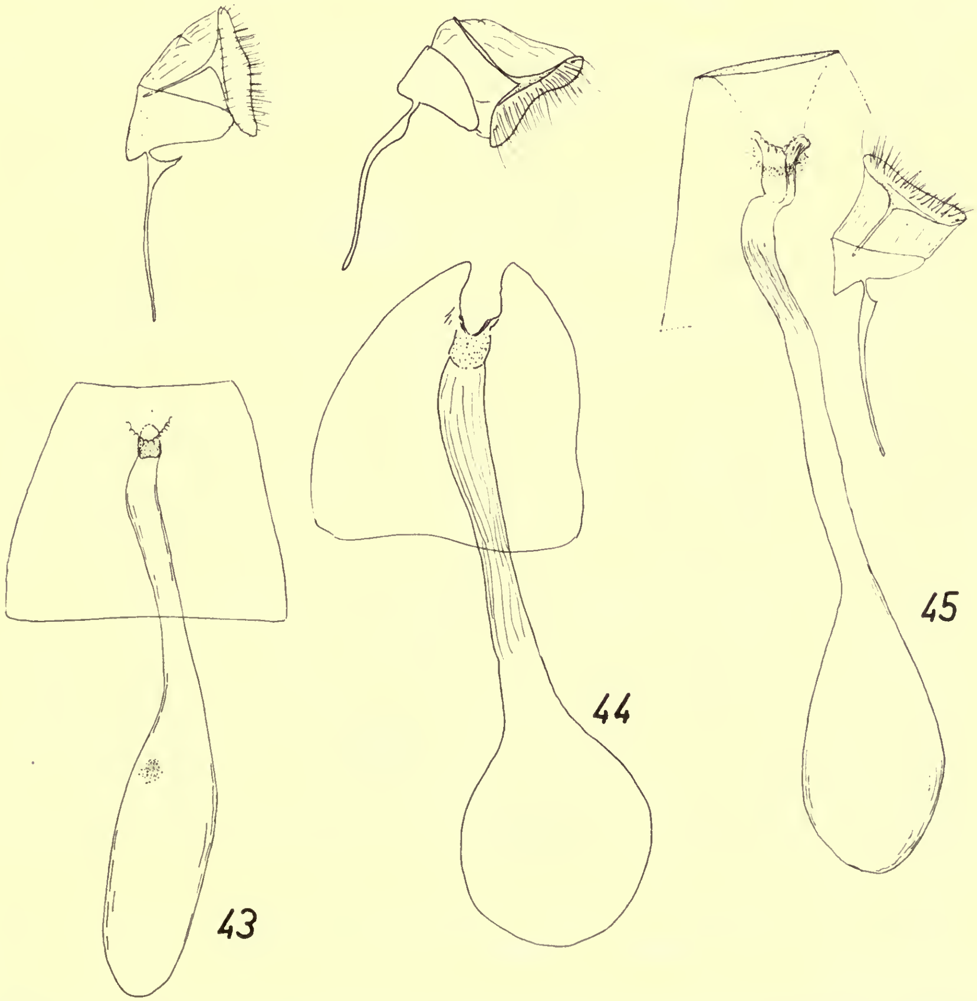
Ocellus well developed. Face broadly rounded ; corneous point and ventral ridge both absent. Labial palpus 2·5 (♂) to 3·5 (♀) times as long as diameter of eye. Fore wing : length 7·5–10·5 mm; ground-colour dull light brown to dirty yellow, variably dusted with brown ; discal dot distinct ; subterminal line ill-defined, often reduced in costal half, formed by row of metallically shiny silvery scales ; a small patch of silvery scales well above dorsum in the middle of wing ; terminal dots distinct. Hind wing light brownish to silky white.

♂ genitalia (Text-fig. 39) : pars basalis distinct, armed with numerous small bristles ; juxta-plate ovate, with rather short, equally long, tapering pointed arms ; aedeagus with bulbose basal projection ; ventral arm absent ; large patch of small cornuti present.

♀ genitalia (Text-figs 44, 45) : ostial pouch slightly demarcated from dustus bursae, rather lightly sclerotized ; no signum.

Distribution. Australia, Northern Territory, Queensland, Prince of Wales I.

This is the only species of *Chilo* known to occur in Australia. The specimens from Prince of Wales I. are larger and lighter coloured than the typical *crypsimetallus* ;



FIGS 43–45. *Chilo*, ♀ genitalia. 43, *auricilius*, Thailand. 44, *crypsimetallus*, Australia, Cedar Bay, holotype of *ochrileucalis*. 45, ? *crypsimetallus*, Australia, Prince of Wales I.

all these are females and have the genitalia slightly different from Queensland specimens. Perhaps a distinct species is involved ; only discovery of a male from Prince of Wales I. may solve the problem.

The female genitalia are similar to those in *terrenellus* and *louisiadalis*, which, however, have small ocelli and no metallic scales on the fore wing. The ranges of *crypsimetallus* and the latter two do not overlap.

Type material examined. *crypsimetallus*. Holotype ♂. ' [Australia, Northern Territory] P. Darwin, Dec. '08. F. P. Dodd', GS-4901-SB, in Commonwealth Scientific and Industrial Research Organization, Division of Entomology, Canberra.

ochrileucalis. Holotype ♀. ' [Australia, Queensland] Cedar Bay, s. of Cooktown, Meek, 97–23 ; *Diatraea ochrileucalis* ♀ Type Hmpsn. ', GS-11154-BM, in BM(NH).

Other material. AUSTRALIA : Cedar Bay, Queensland, 1 ♂, in BM(NH) ; 1 ♀ in author's coll. ; Prince of Wales I., 5 ♀, in Cornell University, Ithaca, N.Y., U.S.A. and in author's coll.

Chilo polychrysus (Meyrick)

(Pl. 2, fig. 4 ; Pl. 3, fig. 15 ; Text-figs 46, 47, 52)

Diatraea polychrysa Meyrick, 1932 : 321.
Proceras polychrysa (Meyrick) Kalshoven, 1950 : 413, figs 229, 235a [pupa], 236 [larva].
Chilotraea polychrysa (Meyrick) Martin, 1954 : 120, figs 9 [♂ genitalia], 18 [♀ genitalia].
Chilo polychrysa (Meyrick) Bleszynski, 1962b : 115, fig. 5 [♂ genitalia].

Head similar as in *auricilius*, except for labial palpus which is proportionately slightly shorter in *polychrysus*. Fore wing : length 6·7–7·5 mm ; R_1 confluent with *Sc* ; ground-colour varying from whitish to yellow variably suffused with ochreous brown scales ; median line a distinct, oblique, ochreous brown shade with median line represented by shiny silvery scales ; discal dot reduced ; subterminal line ill-defined, white, with a few silvery scales ; area between both transverse lines darkened with ochreous brown below costa ; subterminal area darkened ; terminal dots ill-defined or absent ; fringes slightly glossy. Hind wing varying from white to dirty cream, with apical area slightly suffused with darker colour ; fringe whitish.

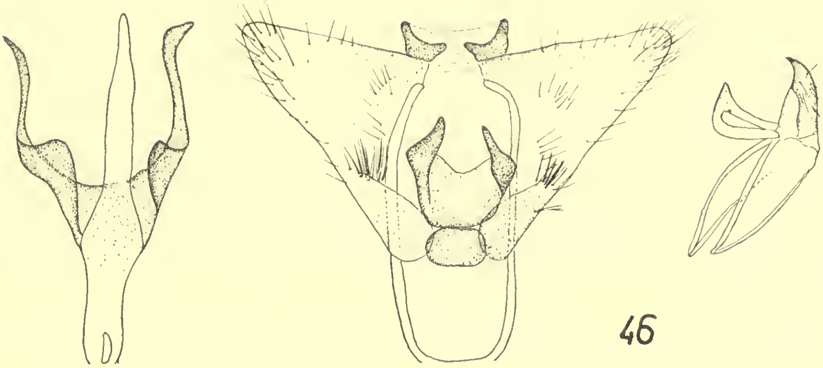
♂ genitalia (Text-figs 46, 47) ; valva decidely tapering to a narrowly rounded apex ; bunch of stout hairs close to ventral margin at one-third distance from base ; distinct, rather heavily sclerotized, notched pars basalis ; juxta-plate with arms short, tapering, nearly symmetrical ; aedeagus a little longer than valva ; ventral process of aedeagus bifurcate into two long, narrow arms, each arm with subbasal flap and minute subapical dentation ; cornuti absent.

♀ genitalia (Text-fig. 52) ; seventh sternum with rather heavily sclerotized area surrounding ostium bursae, with long band posteriorly divided longitudinally in some specimens ; ostial pouch slightly demarcated from ductus bursae, armed with small sclerite at either side ; ductus bursae behind ostial pouch with a short, rather heavily sclerotized portion, then lightly sclerotized, sometimes swollen in caudal portion ; signum absent.

Some of the examined adults were bred from stem of ' paoli '.

Distribution. India, Assam ; Thailand ; Indonesia, Malacca ; Malaysia ; South China, Kanton.

Externally this species comes very close to *auricilius*, but it is easily separated by the genitalia of both sexes as is shown in the figures. Similarities in the genitalia



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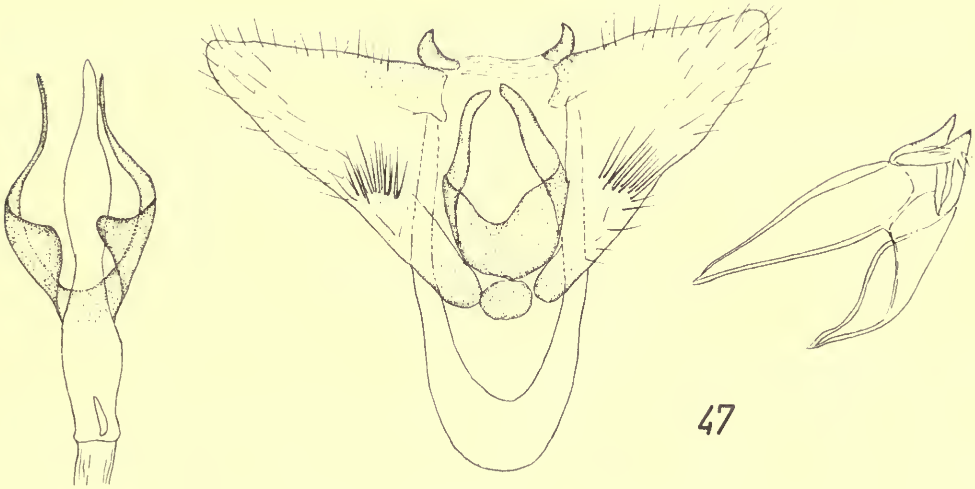

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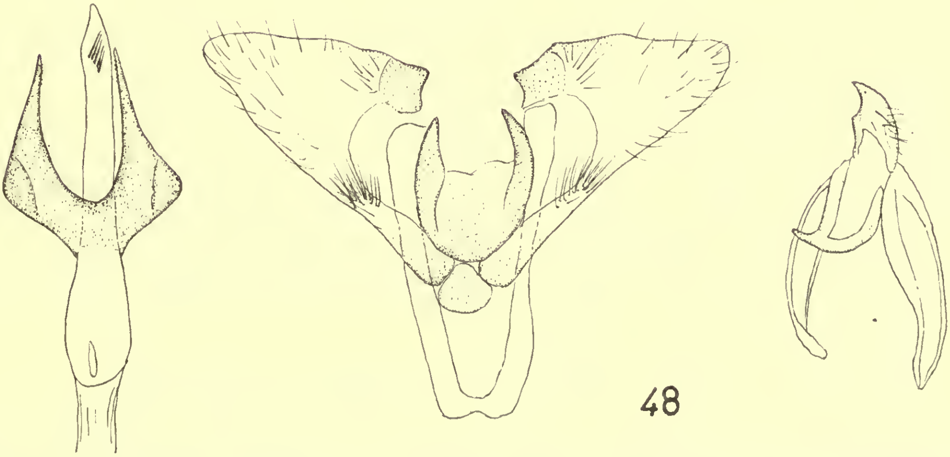

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FIGS 46–48. *Chilo*, ♂ genitalia. 46, *polychrysus*, Malaya, paralectotype. 47, *polychrysus*, Malaya, paralectotype. 48, *louisiadalis*, Vulcan I.

suggest that *polychrysus* comes very near *terrenellus* and *louisiadalis*, from which it differs by the presence of the pars basalis of the valva and the lack of cornuti ; moreover, *polychrysus* has more strongly tapered valva, a differently shaped ventral arm of aedeagus and a smaller juxta-plate. In the ♀ genitalia *polychrysus* is distinguished by the heavily sclerotized area surrounding ostium bursae. Externally *polychrysus* is readily separated from *terrenellus* and *louisiadalis* by the presence of metallic scales on the fore wing, the much smaller size and the yellow coloration of the fore wing. The ranges of *polychrysus*, *terrenellus* and *louisiadalis* do not overlap. The ranges of *polychrysus* and *auricilius* overlap in Indonesia, Thailand and Assam, India.

Type material examined. LECTOTYPE ♂ (present designation). ' Malaya Pen. Malacca 8.i.1925. Larvae boring stems of Paoli. G. H. Corbett and B. A. R. Gater ', GS-10313-BM, in BM(NH).

Paralectotypes. 15 ♂♀, Perak, Selangor, Alor Star, Sungei Tua, Kuan, Parit Buntar, Titi Serong, Pekan, Sungai Kepar, Malaysia, in BM(NH) and in author's coll.

Other material. INDONESIA : Kuala Lumpur, 15 ex., in BM(NH) ; THAILAND : Bangkok, 5 ♀, in BM(NH) ; INDIA : Assam, 1 ♀, in BM(NH) ; Khasis, 1 ♀, in BM(NH).

Chilo louisiadalis (Hampson)

(Pl. 4, figs 4, 7 ; Text-figs 48, 49, 53)

Diatraea louisiadalis Hampson, 1919 : 545.
Chilo louisiadalis (Hampson) Bleszynski, 1962*b* : 119, fig. 6 [♂ genitalia].

Ocellus small. Face broadly rounded, very slightly protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : length 9·0–15·0 mm ; R_1 confluent with *Sc* ; ground-colour dull yellow-brown, markings brown ; a brown shade from apex, obliquely to discal dot, the latter in most instances very distinct ; wing longitudinally indistinctly streaked with brown ; subterminal line and median line present ; subterminal line a row of brown specks, rather distant from termen ; subdorsal tooth absent ; median line a brown shade ; discal dot present ; terminal dots present ; fringe slightly glossy. Hind wing varying cream to brown.

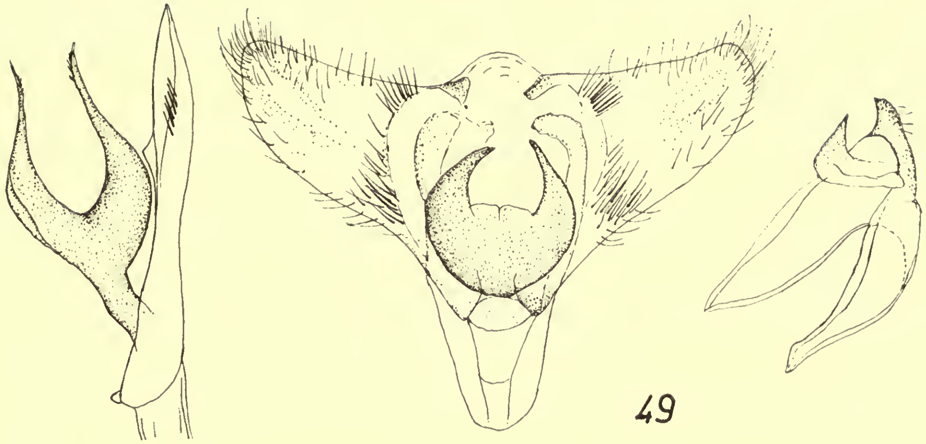
♂ genitalia (Text-figs 48, 49) : pars basalis absent ; hairs stout ; juxta-plate broad, with arms of equal length, rather short, without subapical teeth ; aedeagus with bulbose basal projection rather small ; ventral arm very strong, from near base of aedeagus ; its basal portion stem-like, narrow, the distal part very broad, tapering, with two long, thin, pointed arms of equal length ; basal margin of arm oblique ; a row of small cornuti present.

♀ genitalia (Text-fig. 53) : seventh sternite without a heavily sclerotized plate ; ostial pouch small, rather heavily sclerotized, well demarcated from ductus bursae ; signum absent.

Host plant of the larva is unknown.

Distribution. Louisiade Archipelago ; New Guinea ; Vulcan Island.

This species is very close to *terrenellus*, which has no longitudinal streaks on the fore wing ; in ♂ genitalia the basal margin of the arms of the ventral arm of the aedeagus is almost perpendicular to the stem, being oblique in *louisiadalis*. The ♀ genitalia of the two species are nearly indistinguishable from each other, however,



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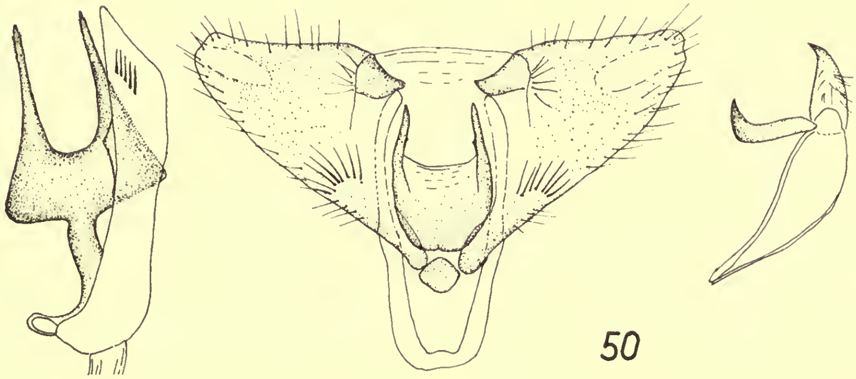

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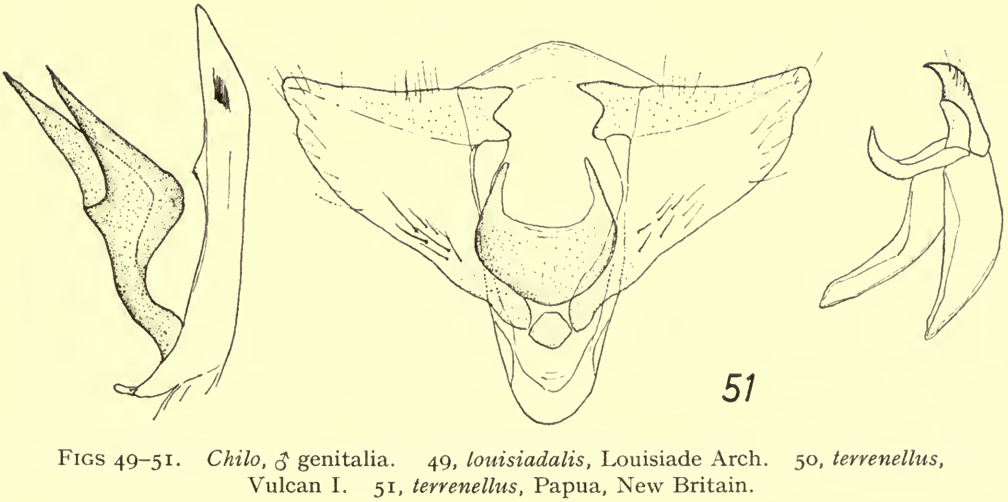

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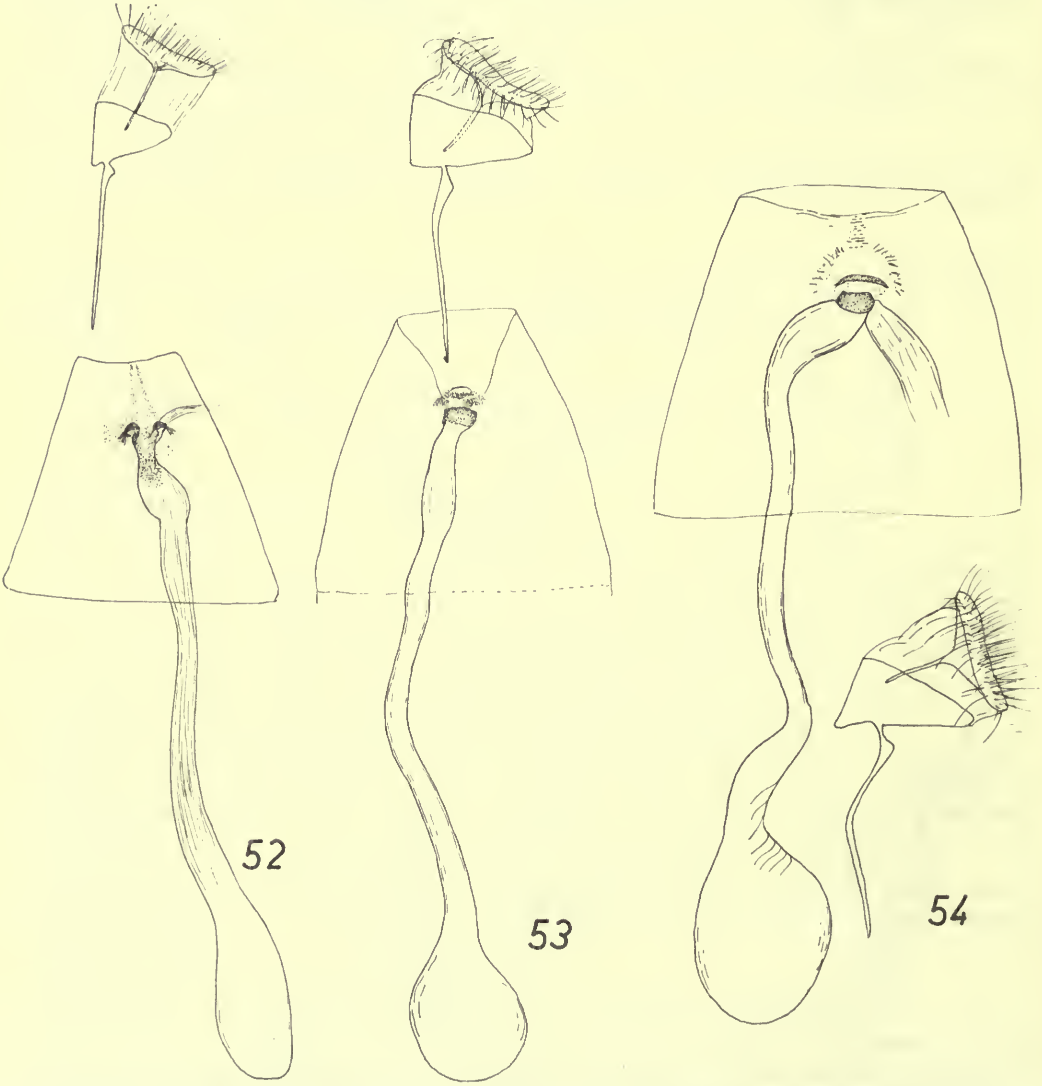
FIGS 49–51. *Chilo*, ♂ genitalia. 49, *louisiadalis*, Louisiade Arch. 50, *terrenellus*, Vulcan I. 51, *terrenellus*, Papua, New Britain.

generally the semi-circular sclerite near the ostium bursae in *louisiadalis* is rather better developed, broader than in *terrenellus*, and the ductus seminalis is narrower than in *terrenellus*. Another close species is *polychrysus*, which, however, has metallic scales on the fore wing and is very easy to separate from *louisiadalis*. The ranges of both *louisiadalis* and *terrenellus* overlap.

Type material examined. Holotype ♂. '[Louisiade Archipelago] St. Aignan, Nov.1897, Meek ; *Diatraea louisiadalis* type ♂ Hmpsn.', abdomen missing, in BM(NH).



FIGS 52–54. *Chilo*, ♀ genitalia. 52, *polychrysus*, India, Assam. 53, *louisiadalis*, Dutch New Guinea. 54, *terrenellus*, Papua, New Britain.

Other material. LOUISIADE ARCHIPELAGO : St. Aignan, 1 ♀, in BM(NH) ; NEW GUINEA: Hydrographer Mts., 2500′, 1 ♀, in BM(NH); Morobe District, Wan and Padwi, 6 ♂, 8 ♀, in Canadian National Collection, Ottawa, Ont., Canada ; VULCAN ISLAND : 1 ♂, 1 ♀, in BM(NH).

Chilo terrenellus Pagenstecher

(Pl. 1, fig. 10 ; Pl. 4, figs 2, 3 ; Text-figs 50, 51, 54)

Chilo terrenellus Pagenstecher, 1900 : 160.
Chilotraea terrenellus (Pagenstecher) Martin, 1954 : 120, figs 10 [♂ genitalia], 17 [♀ genitalia].
Chilo terrenellus Pagenstecher ; Bleszynski, 1962*b* : 7, fig. 7 [♂ genitalia].

Ocellus vestigial or small. Face similar to that in *louisiadalis*. Labial palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : length 12·5–18·0 mm ; R_1 confluent with *Sc* ; coloration rather similar as in *louisiadalis*, but longitudinal streaks absent ; some specimens very dark brown. Hind wing varying from dirty white to grey.

♂ genitalia (Text-figs 50, 51) : generally similar to those in *louisiadalis*, but with basal edge of the main part of the ventral arm of the aedeagus almost perpendicular to the stem.

♀ genitalia (Text-fig. 54) : very similar to those in *louisiadalis* ; for more details see under *louisiadalis*.

Distribution. New Guinea ; Bismarck Archipelago ; Vulcan Island.

Type material examined. Lectotype ♀ (selected by Martin, 1954 : 120). ‘ [Bismarck Achipelago] Neu Pommern C. Ribber ’, in Institut f. Spezielle Zoologie, Berlin.

Paralectotypes. 1 ♀, same data, GS-7663-BM, in BM(NH) ; 1 ♀, same data, GS-759-SB, in Institut f. Spezielle Zoologie, Berlin.

Other material. NEW GUINEA : 2 ♂, 1 ♀, in BM(NH) ; Mt. Goliath, 1 ♂, in author's coll. ; 4 ♀, in Canadian National Collection, Ottawa, Ont., Canada ; NEW BRITAIN : 2 ♂, 1 ♀, in Canadian National Collection, Ottawa, Ont. ; VULCAN ISLAND : 7 ex., in BM(NH) and author's coll.

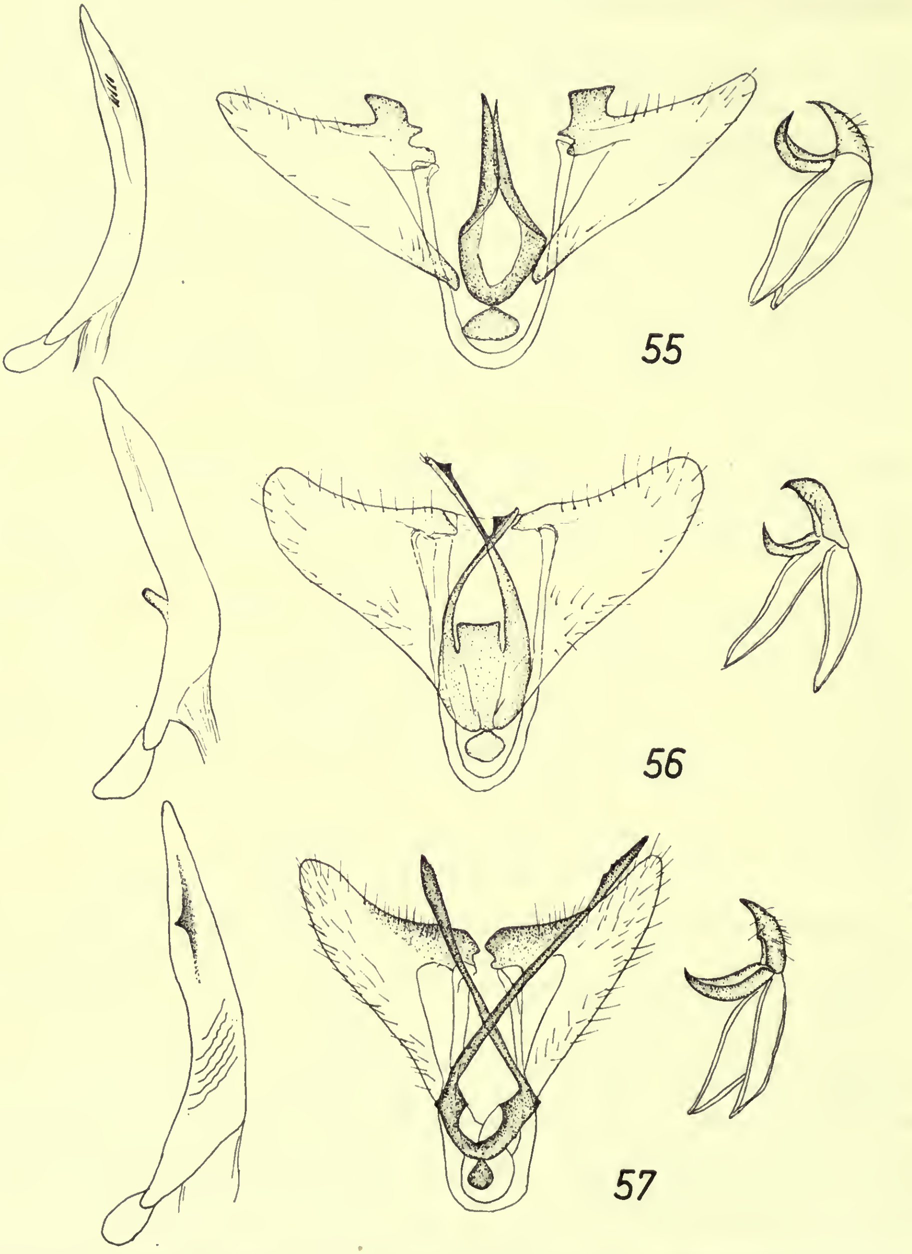
Chilo agamemnon Bleszynski

(Pl. 2, fig. 7 ; Pl. 4, fig. 10 ; Text-figs 8, 5, 58)

Chilo agamemnon Bleszynski, 1962*b* : 119, figs 13 [♂ genitalia], 28 [♀ genitalia], pl. 13, fig. 6 [adult].
Chilo agamemnon Bleszynski ; Bleszynski, 1965 : 122, pl. 5, figs 64–1, 2 ; pl. 43, fig. 64 [♂ genitalia], pl. 94, fig. 64 [♀ genitalia].
Chilo simplex (Butler) ; auct. in part. [mis-identifications].

Ocellus well developed. Face broadly rounded, slightly protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : length 8·0–14·5 mm ; R_1 free ; ground-colour dull yellow to brown ochreous ; subterminal line rather distinct in ♂, reduced in ♀, brown, weakly dentate, excurved, without subdorsal tooth ; median line present in ♂, ill-defined or absent in ♀ ; discal dot present, but diffused or absent in some specimens : a well developed brown shade extending obliquely from apex to discal dot ; terminal dots present. Hind wing glossy cream greyish to silky wnite.

♂ genitalia (Text-fig. 55) : pars basalis distinct, pointed, minutely toothed ; arms of juxta-plate equally long, gradually tapering to points, without subbasal teeth ; aedeagus distinctly



FIGS 55–57. *Chilo*, ♂ genitalia. 55, *agamemnon*, Uganda. 56, *diffusilineus*, Northern Rhodesia. 57, *zacconius*, Senegal, holotype.

curved, bulbose basal projection present ; ventral arm absent ; row of minute cornuti present.

♀ genitalia (Text-fig. 58) : ostial pouch well demarcated from ductus bursae, bowl-shaped, rather lightly sclerotized, with wrinkled margins ; with lateral projection with a heavily sclerotized patch ; signum absent.

Distribution. Israel ; north Egypt ; Sudan ; Uganda.

In Israel this species is an important pest of maize and other cereal crops. In Uganda, specimens of *agamemnon* were bred from Esege (*Vossia cuspidata*). The specimens bred in Israel emerged from June to December, but those from Uganda in April and September ; the specimens from Sudan were taken in February. The species has three or four broods a year. For details on biology of *agamemnon* see Rivnay, 1963 and 1967.

C. agamemnon has for a long time been recorded from the Near East as ' *Chilo simplex* Butler ' (synonym of *suppressalis*), which does not occur in the Near East. This species seems to have spread northward in Israel during past several years. It is rather similar externally to *diffusilineus* and *zacconius*, which are also characterized by an oblique shade running from the apex of the fore wing. So far *zacconius* is known only from the west coast of Africa ; it is easily separable from *agamemnon* by the genitalia of both sexes as is shown in the figures. The ranges of *agamemnon* and *diffusilineus* overlap in Sudan, but the two species are perfectly distinct on the genitalia of both sexes, as is shown in the figures.

Type material examined. Holotype ♂. ' [Egypt] Gemmaiza, 2.9.31 ', GS-9184-Mus. Vind., in Naturhistorisches Museum, Vienna.

Paratypes. 1 ♂, 1 ♀, Egypt, in Naturhistorisches Museum, Vienna ; 1 ♂, 1 ♀, Egypt, in author's coll. ; 2 ♀, Cairo, Egypt, coll. Amsel, Karlsruhe.

Other material. ISRAEL : Beer Tuvia, 2 ♂, 3 ♀, in author's coll. ; Rehovot, 5 ex., in Mahon Vulcani, Bet-Dagan, Israel. SUDAN : Malek, 2 ♀, Kosti, White Nile, 1 ♀, in BM(NH) ; UGANDA : Tirynyi, 1 ♂, 2 ♀, in Commonwealth Institute of Biological Control, Kampala, Uganda, and in author's coll.

Chilo diffusilineus (J. de Joannis)

(Pl. 2, figs 10, 11 ; Text-figs 56, 59–61)

Diatraea diffusilinea J. de Joannis, 1922 : 194, pl. 8, fig. 5.

Chilo phaeosema Martin, 1958 : 189, figs 2 [♂ genitalia], 6 [♀ genitalia], pl. 6, fig. 4 [adult] **Syn. n.**

Chilo diffusilineus (J. de Joannis) Bleszynski, 1963 : 113.

Similar to *agamemnon*. Fore wing : length 8·0–13·0 mm ; R_1 free ; ground-colour varying from orange-yellow to dirty yellow.

♂ genitalia (Text-fig. 56) : pars basalis absent ; juxta-plate with two long arms of equal length, but in some specimens the right arm shorter than the left arm ; each arm provided with a distinct, subapical tooth and several short hairs ; aedeagus with basal part curved ; bulbose basal projection varying in size, ventral arm very short ; cornuti absent.

♀ genitalia (Text-figs 59–61) : ostial pouch very well demarcated from ductus bursae ; heavily sclerotized, produced as a long, heavily sclerotized rod into ductus bursae ; in some specimens, a distinct, lateral, thorn-like projection ; signum absent.

Distribution. Sudan ; Ethiopia ; Rhodesia ; Tanzania ; Mozambique ; Guinea ; Senegal ; Nigeria ; Sierra Leone.

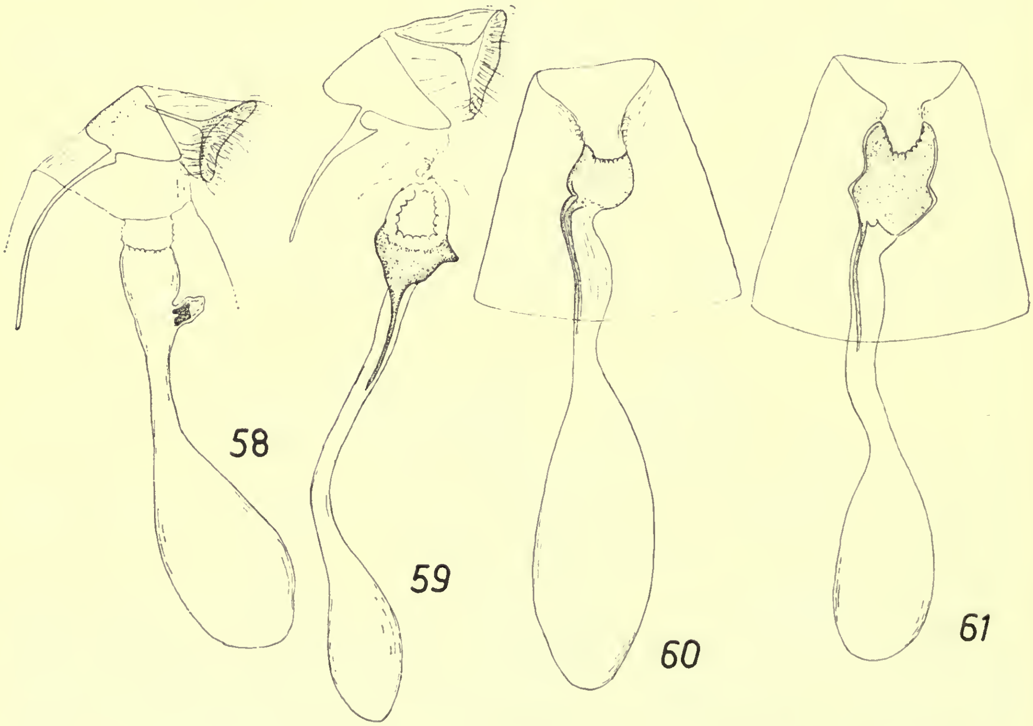
C. *diffusilineus* is very similar externally to *agamemnon* and *zacconius*, but it is easily distinguishable on the genitalia of both sexes as is shown in the figures. The ranges of *diffusilineus* and *zacconius* overlap in West Africa, and those of *diffusilineus* and *agamemnon* in Sudan. The specimens from Rhodesia are much darker and brighter orange-yellow than from any other locality. The species is rather variable in both external appearance and the genitalia of both sexes.

Type material examined. *diffusilineus*. Holotype ♀. ' [Mozambique] Makulane, xii.07–i.08 ; Type ; *Diatraea diffusilinea* ♀ de Joannis ', GS-2837-SB, in Muséum d'Histoire Naturelle, Geneva.

phaeosema. Holotype ♂. ' [Rhodesia] Makaholi. Rice borer. Dept. Agric. S. Rhodesia, 15.4.1955 ; holotype ', GS-2607-BM, in BM(NH).

Paratypes. 1 ♀, same data as holotype, in BM(NH) ; 2 ♂, 1 ♀, Malawi, Mt. Mlanje, in BM(NH) and in author's coll.

Other material. SUDAN : White Nile, 1 ♂, 3 ♀, in BM(NH) ; ETHIOPIA : Ogolok and Drgira, 2 ♀, in BM(NH) ; RHODESIA : Lialui, 2 ♂, 2 ♀, in BM(NH) and in



FIGS 58–61. *Chilo*, ♀ genitalia. 58, *agamemnon*, Egypt, paratype. 59, *diffusilineus*, Southern Rhodesia, paratype of *phaeosema*, 60, *diffusilineus*, Senegal. 61, *diffusilineus*, Northern Rhodesia.

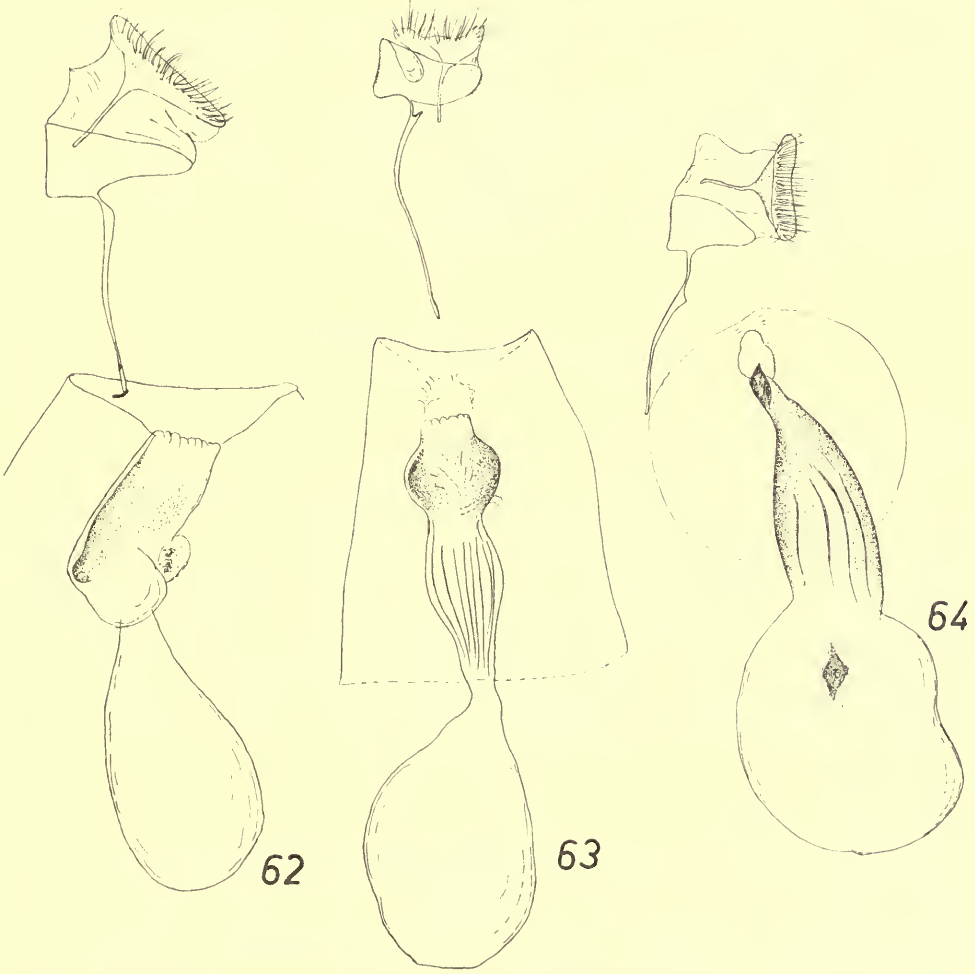
author's coll. ; Senegal : Sedhiou, 22 ♀, in BM(NH) and in author's coll. ; Sierra Leone : 1 ♂, 2 ♀, in BM(NH) ; Guinea : Konakry, 1 ♂, in Muséum National d'Histoire Naturelle, Paris.

Chilo zacconius sp. n.

(Pl. 4, fig. 13 ; Pl. 5, fig. 3 ; Text-figs 57, 62)

Ocellus moderately sized but distinct. Face rounded ; corneous point and ventral ridge both absent. Labial palpus as in *diffusilineus*. Fore wing : length 10·0–14·0 mm ; R_1 confluent with *Sc* ; ground-colour and maculation very similar to those in *diffusilineus*, but ground-colour less variable, always ochreous yellow.

♂ genitalia (Text-fig. 57) : pars basalis absent ; arms of juxta-plate slightly asymmetrical,



Figs 62–64. *Chilo*, ♀ genitalia. 62, *zacconius*, Senegal, paratype. 63, *incertus*, Sudan. 64, *psammathis*, Northern Nigeria, holotype.

very long and thin, with slight subapical dentation ; aedeagus without ventral arm ; bulbose basal projection distinct ; a subapical thorn on a long base.

♀ genitalia (Text-fig. 62) : seventh sternum without plate ; ostial pouch broad, partly heavily sclerotized, well demarcated from ductus bursae ; the latter twisted ; no signum.

Most of examined specimens were bred from rice.

Distribution. Senegal ; Mali ; Ivory Coast ; Nigeria. The range of *zacconius* overlaps that of *diffusilineus* in West Africa.

The genitalia of *diffusilineus* and *zacconius* are very distinct as is shown in the figures ; the arms of the juxta-plate in *diffusilineus* are much shorter, and the ductus bursae is not twisted. Both species are very similar in external appearance.

Type material examined. Holotype ♂. ' Senegal, Ziguinchor 10.v.68 ; on rice 165', GS-4734-SB, in author's coll.

Paratypes. 9 ex., same data, in Institut de Rechérches Agronomiques Tropicales et des Cultures Vivières, Paris and in author's coll. ; IVORY COAST : Ferkessedougou, 5 ex., 2.x.1968 ; SENEGAL : from Richard Toll, 1 ex., 2.x.1966, in Institut de Recherches Agronomiques Tropicales et des Cultures Vivières, Paris ; MALI : Kogoni, 3 ex., 6.x.1967, from rice, in Institut de Recherches Agronomiques Tropicales et des Cultures Vivières, Paris and in author's coll., GS-7624-SB ; SOUTH NIGERIA : Ilesha, 1 ♀, (*Capt. Humphrey*), GS-7900-BM, in BM(NH) ; NIGERIA : Baddegi, from rice stem, 1 ♂ 1 ♀, GS-10721-BM, in BM(NH).

Chilo incertus (Sjöstedt) **comb. n.**

(Pl. 4, fig. 14 ; Text-fig. 63)

Diatraea incerta Sjöstedt, 1926 : 10.
Parerupa incerta (Sjöstedt) Bleszynski & Collins, 1962 : 331.

♀. Ocellus present. Face rounded, moderately protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 4 times as long as diameter of eye. Fore wing : length 12·0 mm (type in poor condition, but obviously smaller) ; R_1 in type confluent with *Sc*, but fused with *Sc* for a long distance in the other ♀ studied ; ground-colour dull yellow ; discal dot small ; subterminal line as ill-defined, yellow-brown line ; median line probably ill-defined or reduced (difficult to detect in poorly preserved specimens studied) ; terminal dots present ; metallic scales absent ; a brown oblique shade from near apex to about middle of the width of the wing ; type almost uniformly brown. Hind wing silky white.

♀ genitalia (Text-fig. 63) : ostial pouch heavily sclerotized, bulbous ; ductus bursae constricted behind ostial pouch, adjacent portion rather heavily sclerotized and swollen, but slightly narrower than the remainder of ostial pouch ; signum absent.

♂ unknown.

Distribution. Sudan.

The presence of an oblique shade in the fore wing suggests that this species comes close to *agamemnon*, *diffusilineus* and *zacconius* from which it is, however, very distinct in the ♀ genitalia as is shown in the figures. The ranges of *incertus*, *agamemnon* and *diffusilineus* overlap in Sudan. The type of *incertus* is in extremely poor condition, but the genitalia are well preserved.

Type material examined. Holotype ♀. ' Sudan Nilen ; Pr. W. Exp. Gyld. ;

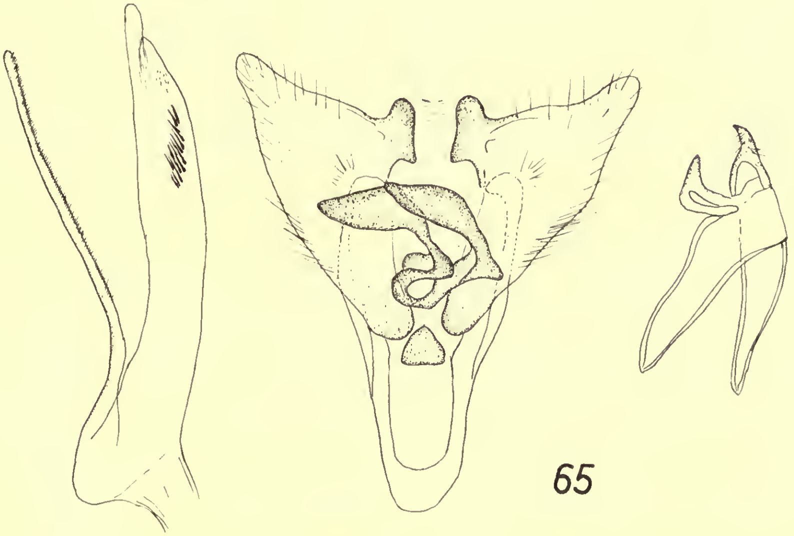
Diatraea incerta Rothsch. ; 425 58 ; 128 ', GS-799-SB, in Naturhistoriska Riksmuseet, Stockholm.

Other material. SUDAN : 1 ♀ in author's coll.

Chilo psammathis (Hampson)

(Pl. 5, fig. 5 ; Text-figs 64, 65)

Argyria psammathis Hampson, 1919 : 450.
Diatraea perpulverea Hampson, 1919 : 53 [syn. Martin, 1954 : 120].



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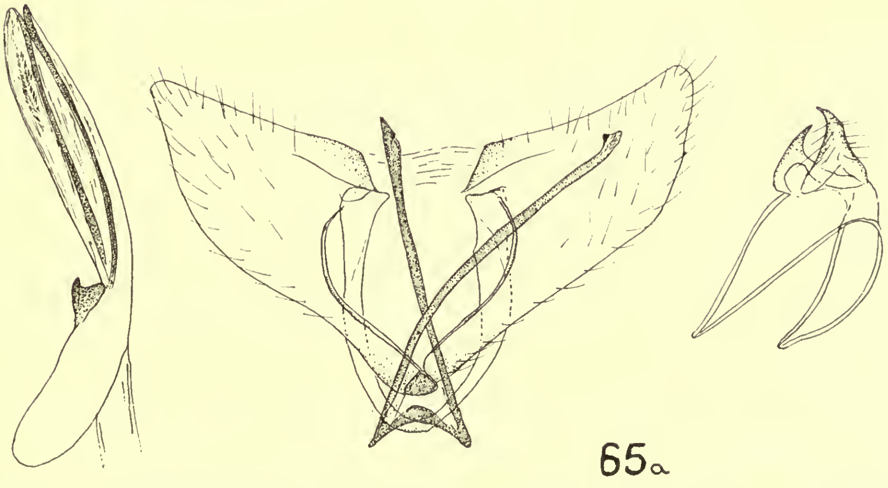


65a

FIG 65–65a. *Chilo*, ♂ genitalia. 65, *psammathis*, Southern Nigeria, paratype. ♂ genitalia. 65a, *mercatorius*, Congo, Elisabethville, holotype.

Chilotraea psammathis (Hampson) Martin, 1954 : 120, figs 8 [♂ genitalia], 20 [♀ genitalia].
Chilo psammathis (Hampson) Bleszynski, 1962*b* : 115, fig. 8 [♂ genitalia].

Ocellus rather small, but distinct. Face rounded, slightly protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 2·5 (♂) to 3 (♀) times as long as diameter of eye. Fore wing : length 8·0–9·0 mm ; R_1 confluent with *Sc* ; apex narrowly rounded ; ground-colour dull, almost unicolorous brown without markings except for indistinct terminal dots ; metallic scales absent ; fringes strongly shiny brown. Hind wing silky whitish, in some specimens with termen greyish.

♂ genitalia (Text-fig. 65) : valva decidedly tapering to a narrowly rounded apex ; pars basalis distinct, glabrose, moderately sclerotized ; juxta-plate characteristic in shape, with strong, elongate, sub-ovate arms, without subapical teeth ; aedeagus without bulbose basal projection ; ventral arm of aedeagus from very near base, very thin, almost reaching end of aedeagus, densely clothed ventrally with minute bristles ; row of tapering moderately long, thin cornuti present.

♀ genitalia (Text-fig. 64) : ostial pouch very strongly sclerotized, small, poorly demarcated from ductus bursae ; the latter very narrow just beyond ostial pouch, then suddenly dilated, bulbose, heavily sclerotized ; with some longitudinal distinct grooves ; signum lamellate without median ridge.

Distribution. Nigeria ; Ghana.

Type material examined. *psammathis*. Holotype ♀. ' N. Nigeria, Bida, 23.ix. 1910, Scott Macfie ; Type H.T. ; *Argyria psammathis* type ♀ Hmpsn. ', GS-2175-BM, in BM(NH) ; 1 ♀ paratype, Ghana ; Bibianaha, abdomen missing, in BM(NH).

perpulverea. LECTOTYPE ♂ (present designation). ' Nigeria, Minna, 28.viii. 1919. Scott Macfie, 1911–389 ; *Diatraea perpulverea* type ♂ Hmpsn. ', GS-2185-BM, in BM(NH) ; 2 ♂ paralectotypes, same data, in BM(NH).

Other material. NIGERIA : North Nigeria, 1 ♂, 1 ♀, in BM(NH) ; GHANA : Northern Territories, 2 ♂, in BM(NH), 1 ♂ in author's coll.

Chilo luniferalis Hampson

(Pl. 1, fig. 11 ; Pl. 4, fig. 6; Text-figs 66, 68)

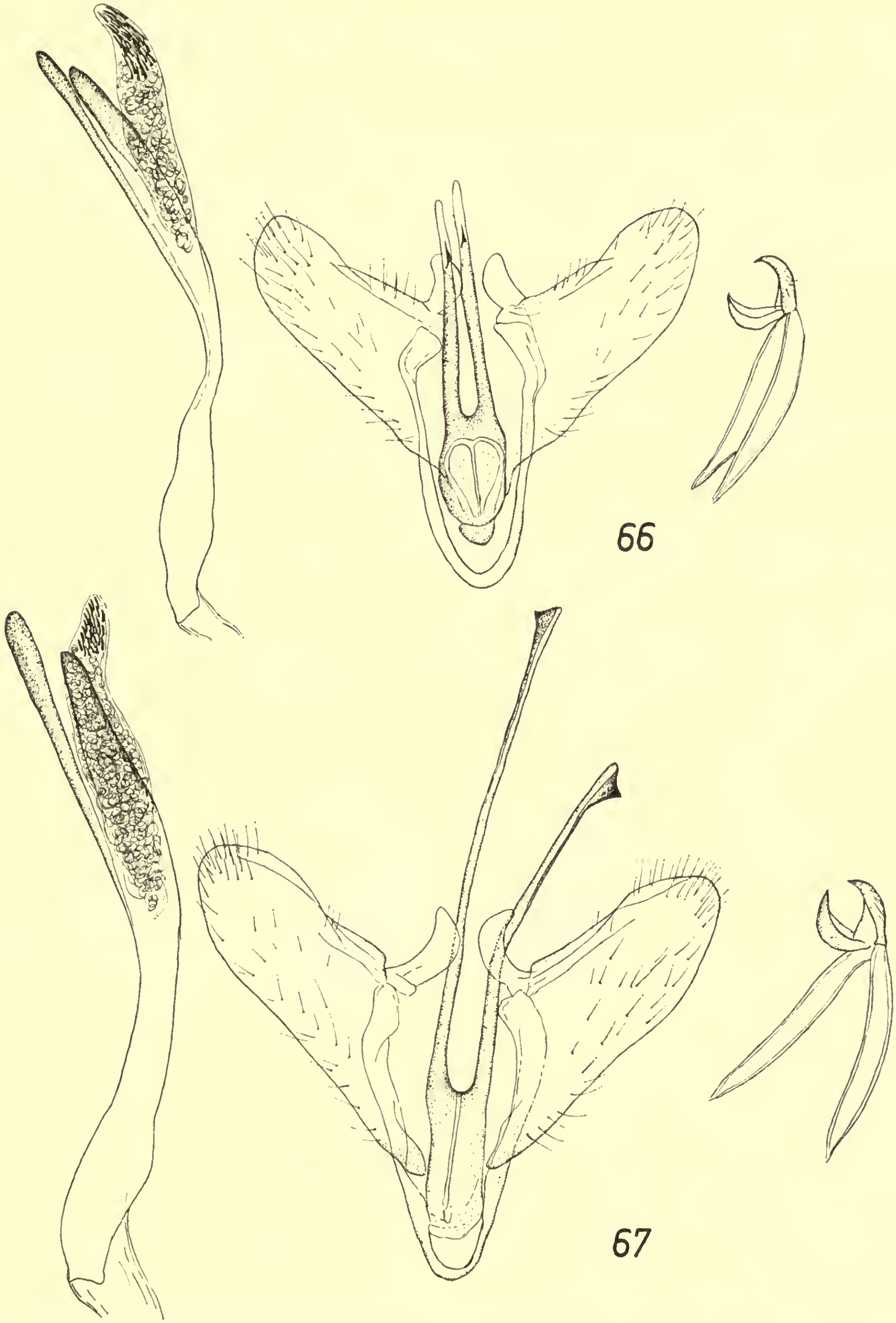
Chilo luniferalis Hampson, 1896*a* : 957.

Ocellus small. Face rounded, slightly protruding forward beyond eye ; corneous point and ventral ridge both absent. Labias palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : length 10·0–15·0 mm ; R_1 free ; ground-colour dull dirty cream dusted with brown scales ; metallic scales absent ; discal dot double ; terminal dots very distinct ; median line reduced ; subterminal line a poorly traceable brown shade, in some specimens almost absent ; fringes slightly glossy. Hind wing dirty cream, termen edged with greyish.

♂ genitalia (Text-fig. 66) : pars basalis distinct, lightly sclerotized ; juxta-plate with two long, thin arms, one of these slightly longer than the other ; length of juxta-plate plus longer arm about equal to length of valva ; each arm of juxta-plate with apex lightly sclerotized and with tooth remote from apex ; aedeagus much longer than valva plus saccus ; angulate, narrow, divided apically ; basal projection and ventral arm both absent ; vesica armed with apical patch of numerous cornuti.

♀ genitalia (Text-fig. 68) : ostial pouch heavily sclerotized, flattened, well demarcated from ductus bursae ; the latter narrow behind ostial pouch, then much swollen, partly heavily sclerotized, longitudinally grooved ; another swelling present near bursa copulatrix.

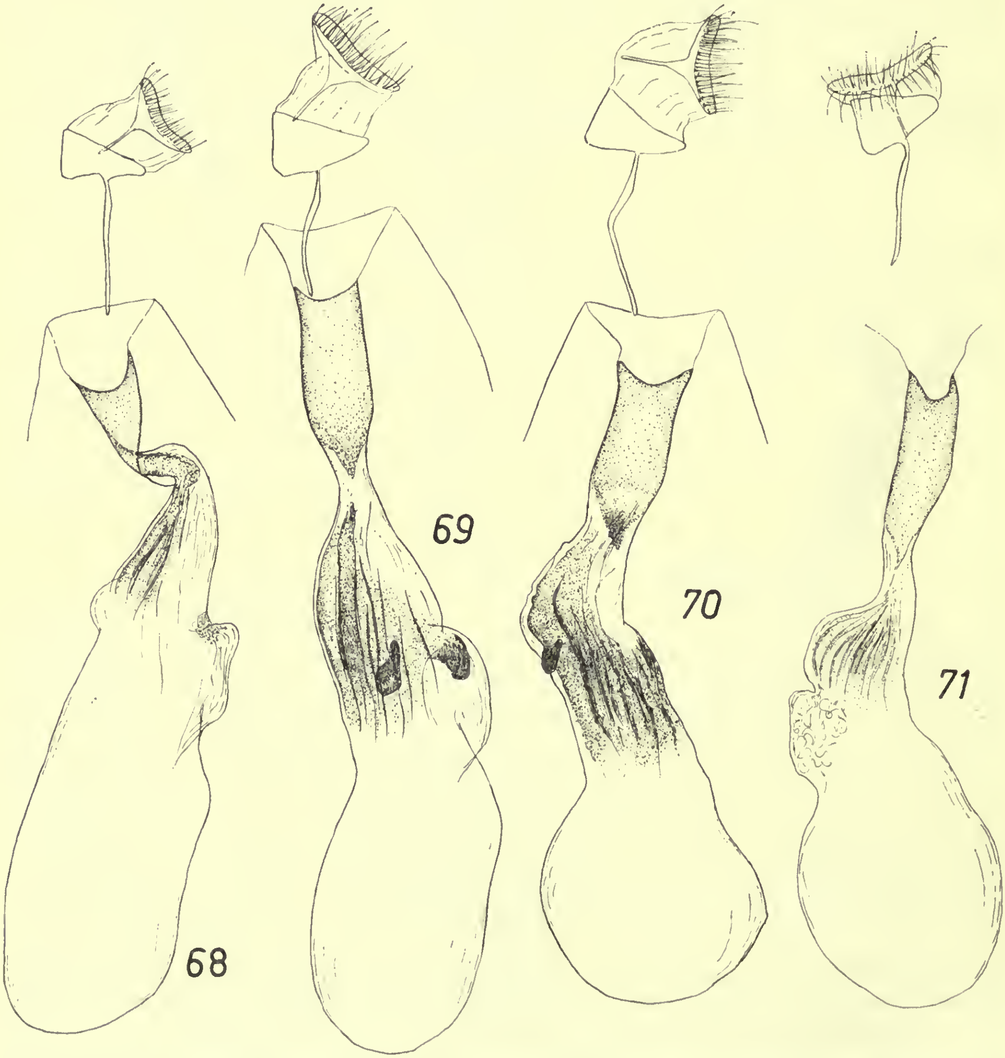
Distribution. Ethiopia ; Sudan ; Central African Republic ; Democratic Republic of the Congo.



Figs 66–67. *Chilo*, ♂ genitalia. 66, *luniferalis*, Congo, Uelle. 67, *perfusalis*, Ghana.

Type material examined. LECTOTYPE ♀ (present designation). '[Ethiopia] 76.59. Abyss. ; Chilo luniferalis ♀ type Hmpsn.', GS-7061-BM(NH).

Other material. SUDAN : Prov. Wad Medani, Blue Nile, 2.viii.1962, 1 ♀, in Zoologische Sammlung d. Bayerischen Staates, Munich ; Gondokoro, White Nile, 3 ♀ in BM(NH) and in author's cool. ; CENTRAL AFRICAN REPUBLIC : Fort Crampel, 1 ♂, in Muséum National d'Histoire Naturelle, Paris ; DEMOCRATIC REPUBLIC OF THE CONGO : Upper Uelle District, Dungu, 2 ♂, in BM(NH) and in author's coll.



FIGS 68–71. *Chilo*, ♀ genitalia. 68, *luniferalis*, Sudan. 69, *perfusalis*, Sierra Leone. 70, *perfusalis*, Northern Nigeria. 71, *perfusalis*, Southern Nigeria, paralectotype.

Chilo perfusalis (Hampson)

(Pl. 4, fig. 15 ; Text-figs 67, 69–71)

Diatraea perfusalis Hampson, 1919 : 55.
Chilo perfusalis (Hampson) Bleszynski, 1962*b* : 115, fig. 25 [♀ genitalia].

Similar to *luniferalis*. Fore wing considerably varying in size and colour, from brownish yellow to almost unicolorous brown.

♂ genitalia (Text-fig. 67) : similar to those in *luniferalis* but much larger, and with much longer arms of juxta-plate ; left arm decidedly longer than right arm ; left arm plus juxta-plate almost twice as long as valva ; each arm with apical strengthening terminating in a strong tooth.

♀ genitalia (Text-figs 69–71) : similar to those in *luniferalis*, but ductus bursae with heavily sclerotized area much larger than in *luniferalis*.

Distribution. Senegal ; Sierra Leone ; Nigeria ; Ghana.

Both lectotype and lectoparatype are smaller and darker than other examined specimens. Perhaps the material examined contains two species, but too little material is available to clarify this problem.

Type material examined. LECTOTYPE ♀ (present designation). 'South Nigeria, Ogbomoso, Yorubaland (Carter) 1901–224 ; *Diatraea perfusalis* type ♀ Hmpsn.', GS-7058-BM, in BM(NH) ; 1 ♀ lectoparatype, same locality, in BM(NH).

Other material. SENEGAL : 6 ♀ in BM(NH) and in author's coll. ; SIERRA LEONE : Pt. Lokko, in BM(NH) ; NIGERIA : North Nigeria, 2 ♂, in BM(NH) ; GHANA : Northern Territory, Navaro, viii.1923, in BM(NH) ; Gambaga, 3 ♀, in BM(NH) and in author's coll.

Chilo costifusalis (Hampson)

(Pl. 1, figs 6, 9, 12 : Pl. 4, fig. 9 ; Text-figs 72, 75–77)

Diatraea costifusalis Hampson, 1919 : 55.
Diatraea costifusalis Hampson ; Rothschild, 1921 : 221.
Chilo costifusalis (Hampson) Bleszynski, 1962*b* : 113, figs 10 [♂ genitalia], 22 [♀ genitalia].

Ocellus rather small. Face rounded, slightly protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : length 7·5–11·5 mm ; R_1 confluent with *Sc* ; ground-colour dull yellow to ochreous, darkened along costa ; sometimes veins and intervenular spaces outlined with brown ; subterminal line rather distinct, consisting of brown, rather metallically shiny scales ; median line present or absent, concolorous with subterminal line, often reduced in dorsal half of the wing ; some patches of rather metallically shiny scales in middle area ; in lectotype a large, contrasting spot ; in one ♀ median line strongly dilated on costa ; terminal specks very distinct ; fringes varying from glossy to metallically shiny. Hind wing silky cream to white.

♂ genitalia (Text-fig. 72) : pars basalis small, rounded, lightly sclerotized ; arms of juxta-plate long, well extended beyond costa of valva ; delicately hairy near base ; both arms with single subapical teeth ; aedeagus without bulbose basal projection ; ventral arm present, short, situated just beyond middle of aedeagus ; a row of thin, small cornuti present.

♀ genitalia (Text-figs 75–77) : ostial pouch not demarcated from adjacent part of ductus bursae but being slightly broader than it ; rather heavily sclerotized ; two lamellate signa with distinct median ridges are present.

Distribution. Malawi ; Tanzania ; Democratic Republic of the Congo ; Angola. Rothschild (1921) mentioned this species from Nigeria, but his record was probably a misidentification of the similar *mesoplagalis*.

Type material examined. LECTOTYPE ♂ (present designation). [Malawi :] ' Nyasaland, Mt. Mlanje, 3.12.1913. S. A. Neave. 1914–171 ; *Diatraea costifusalis* type ♂ Hmpsn.', GS-7059-BM, in BM(NH) ; 1 ♀ lectoparatype, same data, taken on December 1st, GS-7060-BM, in BM(NH).

Other material. TANZANIA : Nyassa Lake, Mango, 600 m, 1 ♀, 20.xi, in Zoologische Sammlung d. Bayerischen Staates, Munich ; DEMOCRATIC REPUBLIC OF THE CONGO : Elisabethville, 40 ex., in Musée Royal de l'Afrique Centrale, and in author's coll. ; ANGOLA : Cambo River to Cugho River, 4 ♂, in BM(NH) and in author's coll. ; Luimbale, Mt. Moco, 15.iii.1934, 1 ♂, in BM(NH).

Chilo mesoplagalis (Hampson)

(Pl. 1, fig. 5 ; Text-figs 73, 78)

Diatraea mesoplagalis Hampson, 1919 : 54.
Chilo mesoplagalis (Hampson) Bleszynski, 1962*b* : 188, fig. 11 [♂ genitalia].

Ocellus well developed. Face rounded ; corneous point and ventral ridge both absent. Labial palpus 3·5 times as long as diameter of eye. Fore wing : length 9·5–11·5 mm ; R_1 free ; ground-colour yellowish, sparsely dusted with dark scales ; subterminal line close to termen, consisting of metallically shiny, silvery scales ; broadly excurved without subdorsal tooth ; median line also silvery, edged with brown at either side, reduced in dorsal half, forming a large contrasting spot ; a semicircular dark spot apical of median line ; terminal specks distinct ; fringes slightly glossy, grey-brown. Hind wing silky white.

♂ genitalia (Text-fig. 73) : valva broad, ventral edge slightly projected medially, basal process absent, arms of juxta-plate long with single teeth well before apices ; a third, very lightly sclerotized, apically hairy arm, which is slightly shorter than other two ; aedeagus with bulbose basal projection ; ventral arm of aedeagus from near base, rather broad basally, then very narrow, nearly reaching apex ; thin portion clothed ventrally with numerous small bristles ; a row of moderate, very thin cornuti present.

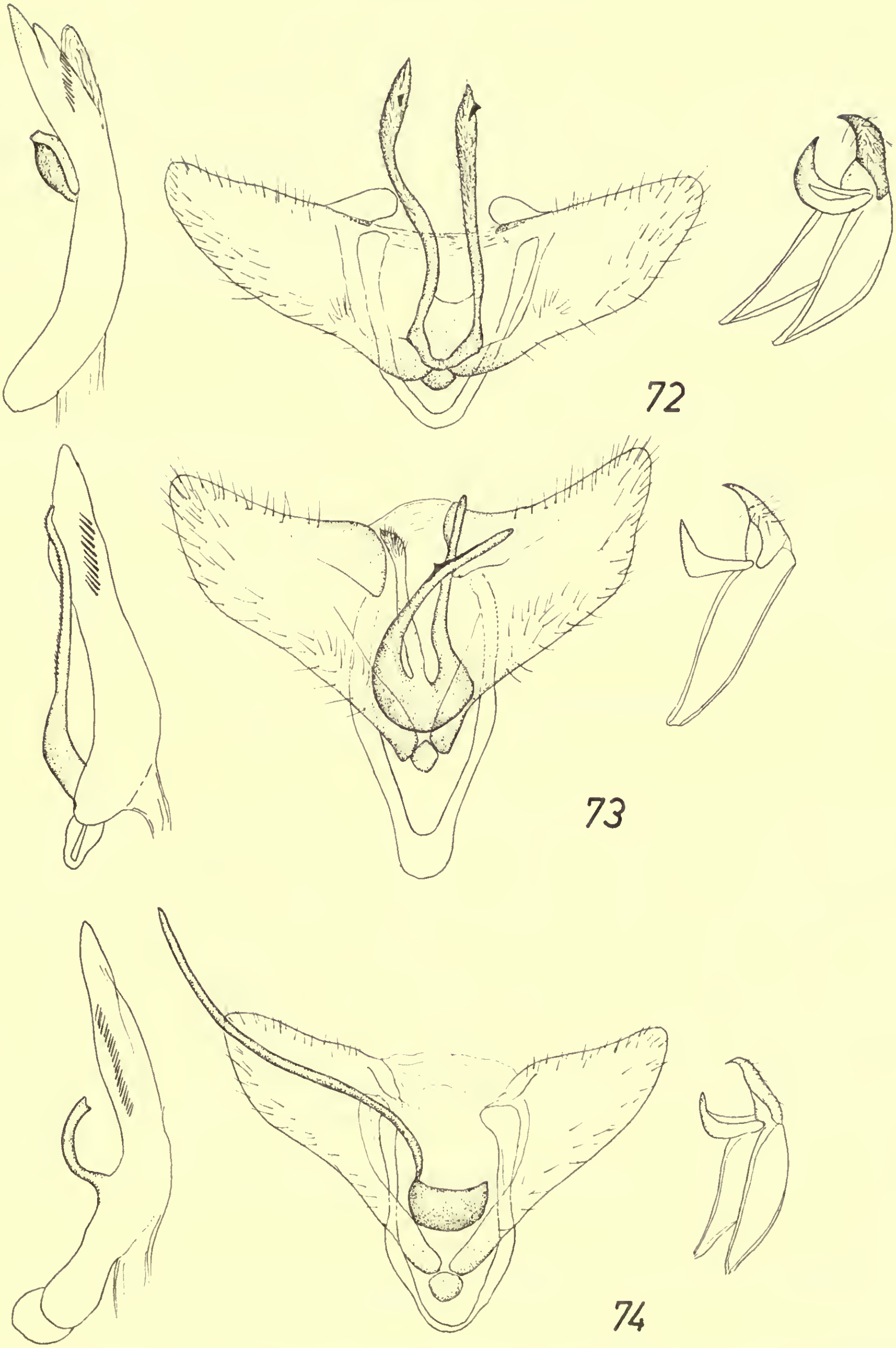
♀ genitalia (Text-fig. 78) : seventh sternite without any differentiation ; ostial pouch well demarcated from ductus bursae, rather heavily sclerotized ; ductus bursae lightly sclerotized, longitudinally wrinkled ; one elongate, lamellate signum with median ridge ; one ♀ from Sudan has slightly differently shaped ostial pouch.

Distribution. Sierra Leone ; Nigeria ; Ghana ; Sudan.

C. mesoplagalis is somewhat similar to *costifusalis*, but has larger ocelli and R_1 free in the fore wing ; in addition, in the ♀ genitalia of *costifusalis* there are two signa and only one in *mesoplagalis* ; in ♂ genitalia, the third, median part of the juxta-plate is absent in *costifusalis*.

Type material examined. LECTOTYPE ♂ (present designation). ' Sierra Leone, W. G. Clements. 99–116 ; *Chilo mesoplagalis* type ♂ Hmpsn.', GS-10940-BM in BM(NH) ; paralectotypes : Sierra Leone, 1 ♂, GS-7013-BM, in BM(NH) ; North Nigeria, 1 ♀, in BM(NH) ; Nigeria, Zungeru, 3 ♀, one GS-7083-BM, in BM(NH) ; Sudan, Gondokoro, White Nile, 1 ♀, GS-10941-BM, in BM(NH).

Other material. GHANA : Kete-krachi, 8 ♀ in BM(NH) and in author's coll.



FIGS 72–74. *Chilo*, ♂ genitalia. 72, *costifusalis*, Nyasaland, lectotype. 73, *mesoplagalis*, Sierra Leone, paralectotype. 74, *argyrogrammus*, Kenya.

Chilo mercatorius sp. n.

(Pl. 5, fig. 7 ; Text-fig. 65a)

♂. Ocellus present. Face slightly protruding forward beyond eye, corneous point and ventral ridge both absent. Labial palpus 3·5 times as long as diameter of eye. Fore wing : length 7·5 mm ; R_1 confluent with Sc ; ground-colour dark grey ; subterminal line whitish, bordered with brown exteriorly ; dorsal-middle area whitish ; discal dot double, very distinct ; median line absent ; terminal dots very distinct, black ; fringes strongly shiny, almost metallic; otherwise no metallic scales in fore wing. Hind wing light grey.

♂ genitalia (Text-fig. 65a) : pars basalis absent ; valva with basal, curved, thin strengthening; juxta-plate with very thin, distinctly emarginate base and very long and thin arms, each terminating in a knob-like projection ; aedeagus with very short, broad ventral arm ; basal bulbose process absent ; patch of minute spikes.

♀ : unknown.

Distribution. Democratic Republic of the Congo.

C. mercatorius resembles some aberrant greyish specimens of *argyrogrammus*, which species, however, is characterized by the presence of the metallic scales in the fore wing and very different genitalia as is shown in the figures. The absence of the basal bulbose projection of the aedeagus, the short ventral arm of the aedeagus, and very long and thin arms of the juxta-plate are diagnostic.

Type material examined. Holotype ♂. 'Coll. Mus. Congo, Elisabethville, 9.xii.1949, Ch. Seydel ', GS-6178-SB, in Musée Royal de l'Afrique Centrale, Tervuren.

Chilo argyrogrammus (Hampson) **comb. n.**

(Pl. 2, fig. 8 ; Text-figs 74, 83)

Hypiesta argyrogramma Hampson, 1919 : 538.

Ocellus rather well developed, sometimes vestigial. Face rounded ; corneous point and ventral ridge both absent. Labial palpus 3 times as long as diameter of eye. Fore wing : length 7·0–9·5 mm ; ground-colour dull white, well dusted with grey-brown scales ; subterminal line shiny silvery, edged with yellow-brown at either side, broadly excurved, without subdorsal tooth ; discal dot very distinct ; median line traceable, brown ; terminal area darkened ; area between subterminal and median lines longitudinally streaked ; fringes distinctly shiny, unicolorous grey. Hind wing light grey or dirty white.

♂ genitalia (Text-fig. 74) : pars basalis absent ; left arm of juxta-plate unusually long, extending far beyond apex of valva, without teeth or hair ; right arm reduced ; bulbose basal projection of aedeagus broad, distinct ; ventral arm of aedeagus curved, very narrow, rather short, situated before middle of aedeagus ; a long row of thin, moderately sized cornuti present.

♀ genitalia (Text-fig. 83) : seventh sternum without heavily sclerotized plate ; ostial pouch rather well demarcated from ductus bursae which is reduced to constriction between ostial pouch and corpus bursae ; corpus bursae unusually large, considerably elongate, with caudal portion finely wrinkled longitudinally ; one lamellate signum with distinct median ridge present.

Distribution. Kenya ; Tanzania.

This species was the only one placed by Hampson in his genus *Hypiesta*, a synonym of *Chilo*.

C. argyrogrammus is very well characterized by the reduction of the right arm of the juxta-plate and the reduction of the ductus bursae. The extent of the wrinkled portion of the corpus bursae seems to be variable. The specimens from Tanzania have the ocelli atrophied, whereas individuals from Kenya have the ocelli rather well developed. It is important to note that variation in the size of ocelli is present also in other species of *Chilo*, e.g. *demotellus*.

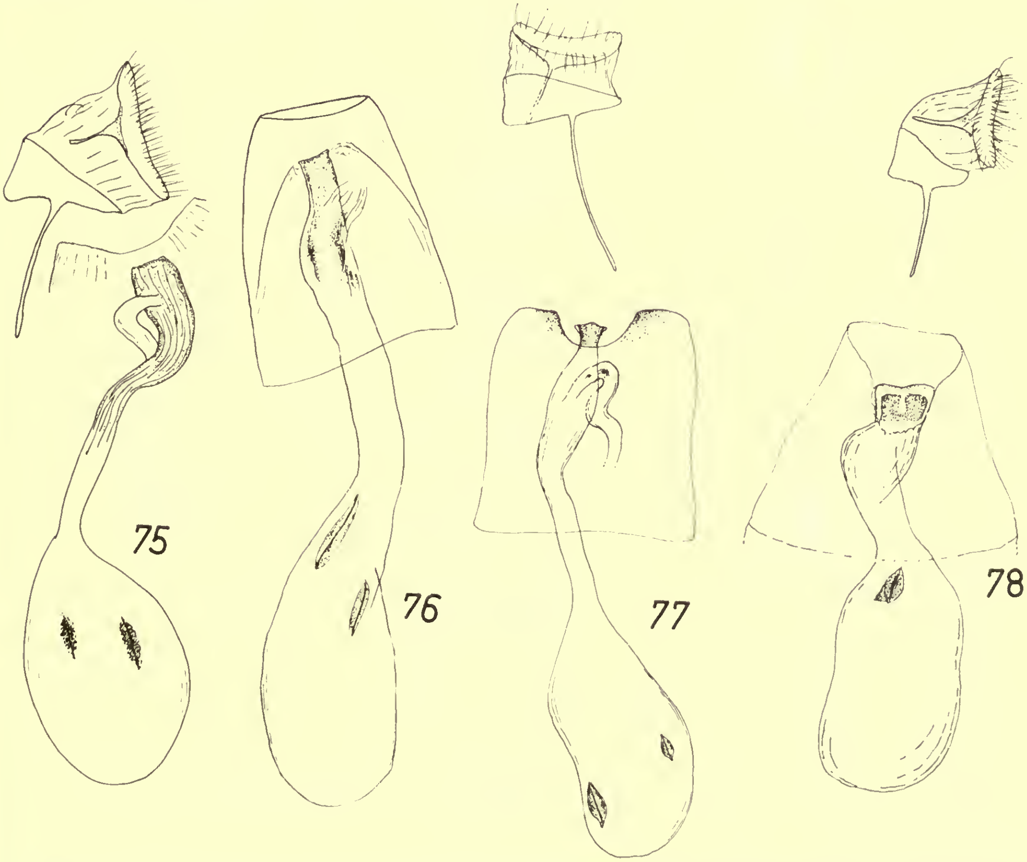
Type material examined. Holotype ♂. [Kenya] ' Nairobi, Kikuyu, B. E. Africa, R. Crawshay. 1900–151. 24.v.1899 ; *Hypiesta argyrogramma* type ♂ Hmpsn.', GS-10942-BM, in BM(NH).

Other material. KENYA : Taveta, 1 ♂, in Muséum National d'Histoire Naturelle, Paris ; Nairobi, Thika Road, 1 ♂ in author's coll. ; Voi, 1 ♂, in BM(NH) ; 1 ♀, in National Museum, Nairobi. TANZANIA : Banagi Hill, Musoma, 1 ♂, in BM(NH).

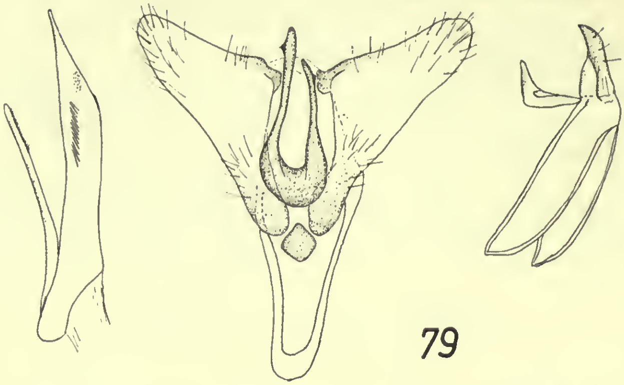
Chilo argyropastus (Hampson)

(Pl. 1, fig. 8 ; pl. 4, figs 16, 17 ; Text-figs 79–82)

Argyria argyropasta Hampson, 1919 : 449.
Diatraea argentisparsalis Hampson, 1919 : 55 [syn. Martin, 1954 : 120].



FIGS 75–78. *Chilo*, ♀ genitalia. 75, *costifusalis*, Nyasaland, paralectotype. 76, *costifusalis*, Angola. 77, *costifusalis*, Tanzania. 78, *mesoplagalis*, Nigeria, paralectotype.



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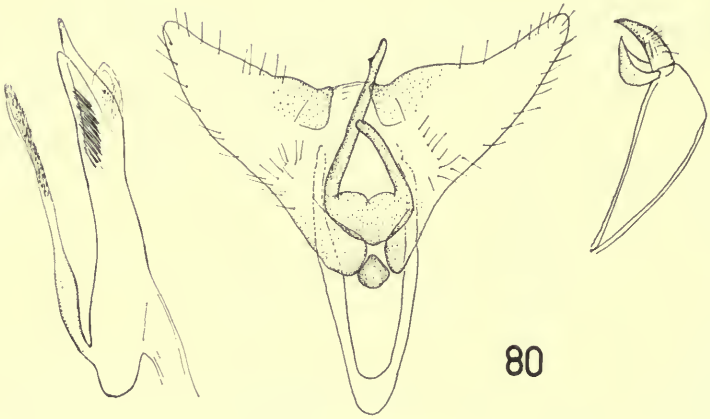

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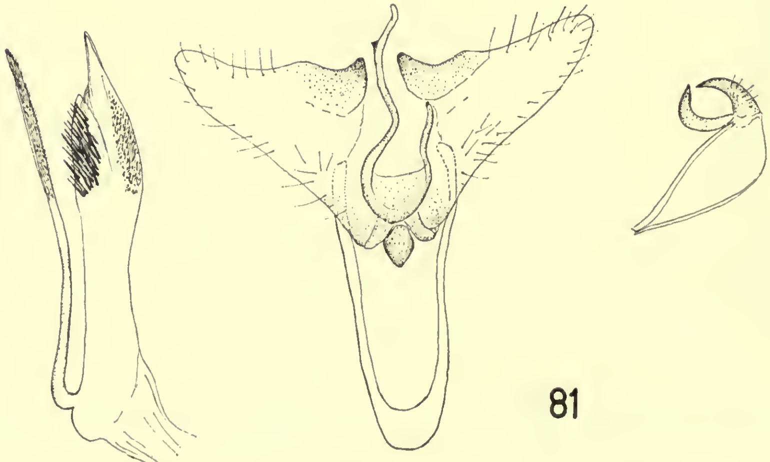

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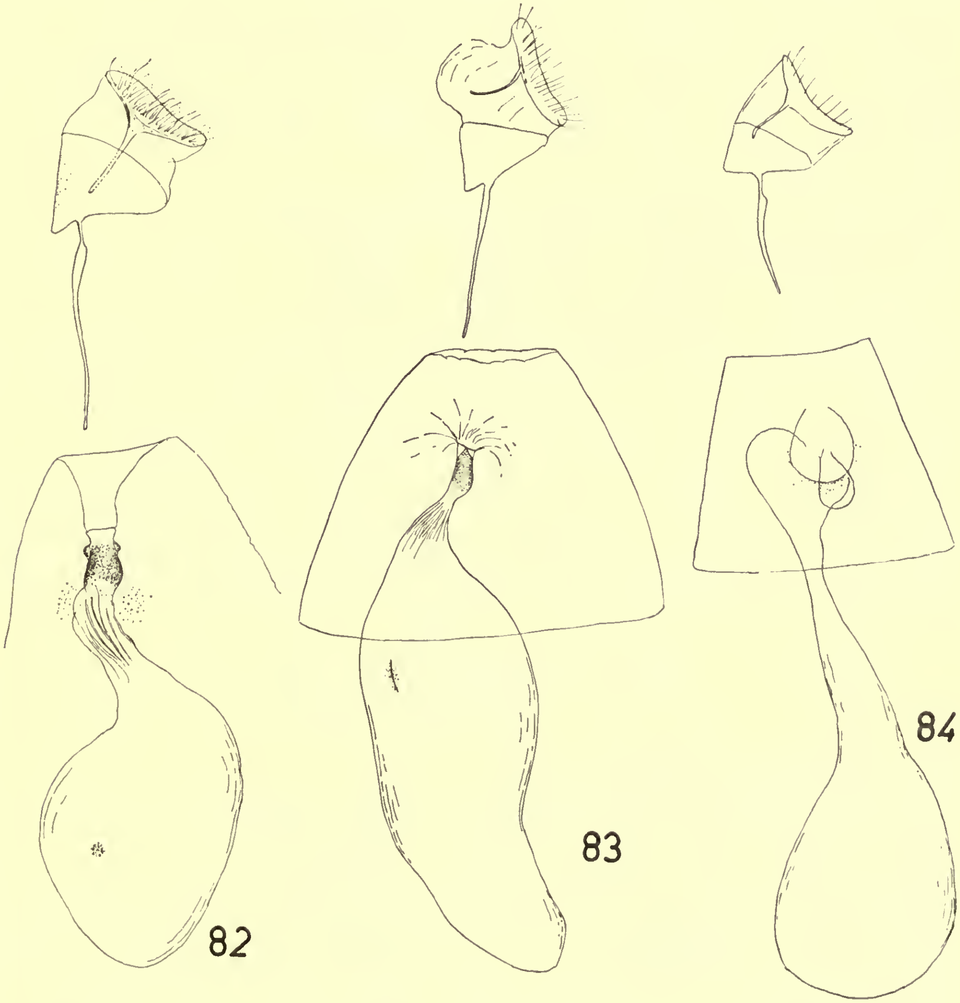
FIGS 79–81. *Chilo*, ♂ genitalia. 79, *argyropastus*. 80, *argyropastus*, Angola. 81, *argyropastus*, paralectotype of *argentisparsalis*.

Diatraea argentisparsalis Hampson ; Janse, 1922 : 5.
Chilotraea argyropasta (Hampson) Martin, 1954 : 120, figs 6 [♂ genitalia], 16 [♀ genitalia].
Chilo argyropasta (Hampson) Bleszynski, 1962*b* : 117, fig. 9 [♂ genitalia].

Ocellus present. Face rounded, slightly protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 3 (♂) to 4(♀) times as long as diameter of eye. Fore wing : length 8·0–11·0 mm ; R_1 confluent with *Sc ;* ground-colour cream, variably dusted with brown scales ; sometimes fore wing almost unicolorous brown : transverse lines traceable ; silvery scales present ; discal dot often absent ; terminal dots present ; fringes unicolorous shiny golden. Hind wing greyish. Form *fuscata* Janse, 1922 : 5. Fore wing densely irrorated with fuscous. From Natal. Form *pallidifascia* Janse, 1922 : 6. Fore wing with a long cream stripe. From Natal.

♂ genitalia (Text-figs 79–81) : pars basalis absent ; juxta-plate with two narrow, moderately



FIGS 82–84. ♀ genitalia. 82, *argyropastus*, Tanzania. 83, *argyrogrammus*, Kenya. 84, sp., Kenya.

long arms, the right arm rather shorter than left arm ; each arm with subapical tooth ; saccus about as long as valva ; aedeagus tapering apicad ; bulbose basal projection absent ; ventral arm from base, very thin, as long as three quarters of aedeagus ; a row of very thin small cornuti present.

♀ genitalia (Text-fig. 82) : seventh sternum without heavily sclerotized plate ; ostial pouch heavily sclerotized, rectangular ; ductus bursae as broad as ostial pouch, distinctly, longitudinally wrinkled ; shorter than bursa copulatrix ; one rounded, scobinate signum present.

Distribution. South Africa ; Rhodesia ; Kenya ; Tanzania ; Angola.

This is a considerably variable species in both external appearance and the genitalia. One ♂ from Dongo, Angola can be separated from the typical form by the longer labial palpi, which are about four times as long as diameter of eye, and by the longer ventral arm of the aedeagus, reaching almost to the apex of the aedeagus. Forms *fuscata* and *pallidifascia* can not be considered as geographical races. Specimens with densely irrorated with fuscous fore wings are found among the typical specimens ; a specimen with a distinct cream stripe on the fore wing is found in the material from Angola. Both forms were cited as subspecies of *argyropastus* by Bleszynski and Collins, 1962 : 239.

One ♂ syntype of *Diatraea argyrolepia* Hmps. [synonym of *orichalcociliellus*], from Malawi, is conspecific with the type of *argyropastus*.

Type material examined. *argyropastus*. Holotype ♂. '[South Africa] Cape 97–185 ; *Argyria argyropasta* type ♂ Hmpsn.', GS-2188-BM, in BM(NH).

argentisparsalis. Lectotype ♂ (selected by Martin, 1954 : 120) [Malawi] 'Nyasaland, Mt. Mlanje, 28.ii.1913. S. A. Neave. 1914–171 ; *Diatraea argentisparsalis* type ♂ Hmpsn.', GS-1734-BM, in BM(NH) ; paralectotypes: Malawi, Mt. Mlanje, 10.iii. and 28.ii., 2 ♂ and 1 ♀, GS-♂-5363-SB and GS-♀-2195-BM, in BM(NH) and in author's coll. ; Rhodesia, Mashonaland, 1 ♀, GS-7010-BM, in BM(NH).

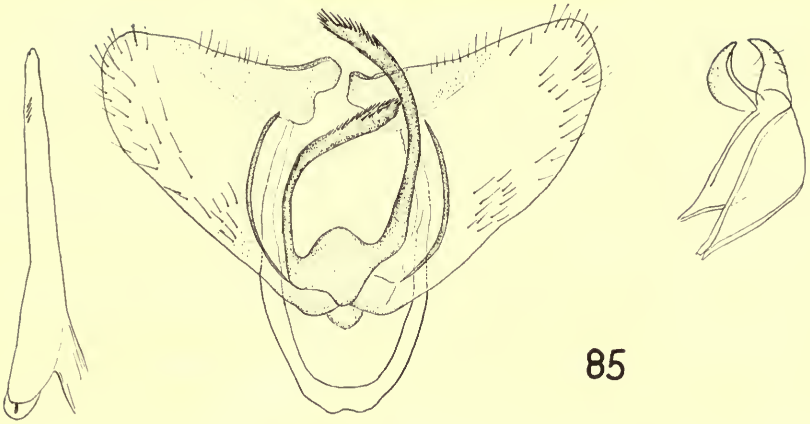
Other material. MALAWI : 1 ♂ (syntype of *Diatraea argyrolepia*), GS-1735-BM, in BM(NH) ; TANZANIA : Nyassa Lake, 1 ♀, in author's coll. ; Mbinga, 1 ♂, in author's coll. ; RHODESIA : Salisbury, 1 ♀, in BM(NH) ; SOUTH AFRICA : Karkloof, 2 ♂ of f. *fuscata*, in BM(NH), 3 ♂ of f. *pallidifascia*, in BM(NH) ; ANGOLA : Dongo, 2 ♂, in Muséum National d'Histoire Naturelle, and in author's coll.

Chilo orichalcociliellus (Strand)

(Pl. 2, fig. 5 ; Text-figs 85–87, 91, 100)

Diatraea orichalcociliella Strand, 1911 : 91.
Diatraea argyrolepia Hampson, 1919 : 54. **Syn. n.**
Chilo argyrolepia (Hampson) Bleszynski, 1962*b* : 112, figs 14 [♂ genitalia], 26 [♀ genitalia].
Chilo orichalcociliella (Hampson) Bleszynski, 1962*b* : 112, fig. 16 [♂ genitalia].

Ocellus moderately or fully developed. Face produced forward, conical, in many specimens with distinct corneous point, sometimes broadly rounded without corneous point, or with weak point ; ventral ridge always present. Labial palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : length 8·5–15·5 mm, maximum width 3·6–6·5 mm ; R_1 confluent with *Sc* ; ground-colour straw-yellow to ochreous yellow dusted with brown scales ; subterminal line formed by row of metallically shiny, golden specks ; median line distinct, concolorous with subterminal line ; discal dot absent ; terminal dots present ; fringes metallically shiny, golden, unicolorous. Hind wing cream-yellow, in some instances darkened with grey.



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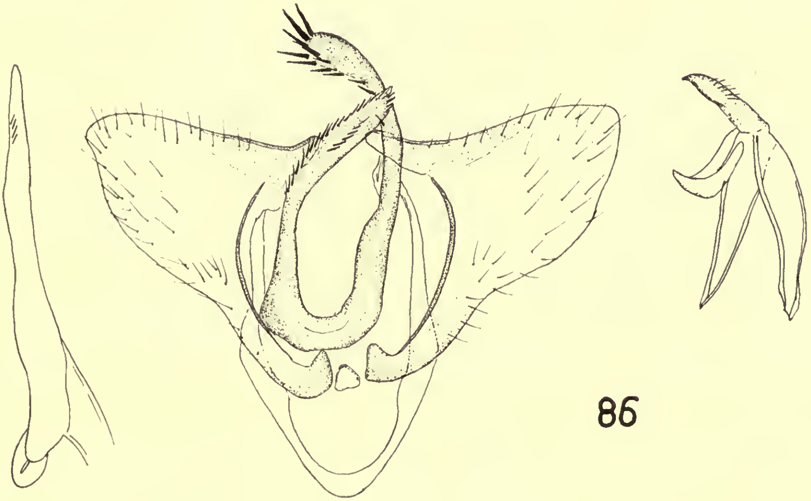

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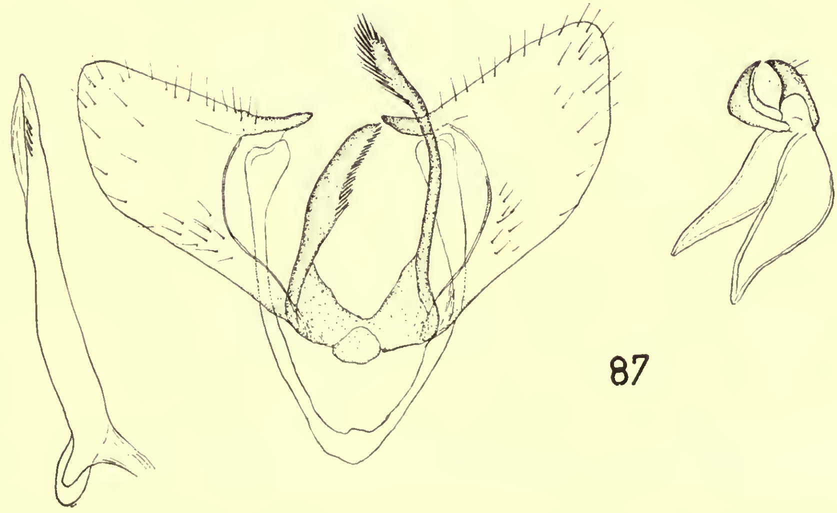

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FIGS 85–87. *Chilo orichalcociliellus*, ♂ genitalia. 85, Madagascar. 86, Madagascar. 87, Kenya.

♂ genitalia (Text-figs 85–87) : valva short and broad, with broadly rounded apex ; saccus normal ; juxta-plate with two long arms densely clothed with short bristles ; the arms are evenly long, or the right arm is longer than the left arm ; aedeagus thin with bulbose basal projection ; ventral arm absent ; subapical patch of small cornuti.

♀ genitalia (Text-figs 91, 100) : seventh sternum with large, almost triangular, heavily sclerotized plate, densely clothed with minute spikes and with two rather triangular patches also clothed with spikes, situated at either side of ostial pouch ; caudal part of plate with deep, window-shaped notch with membrane ; genital opening small ; ductus seminalis narrow ; ostial pouch lightly sclerotized ; one distinct, elongate, scobinate signum ; corpus bursae reaching almost base of abdomen.

Distribution. Kenya ; Tanzania ; Democratic Republic of the Congo ; South Africa ; Madagascar.

Specimens from Kenya and Tanzania were bred from maize.

C. orichalcociliellus is easily distinguishable from allied *aleniellus, thrysis, quirimbellus* and *zoriandellus* by proportionately short, scarcely tapering valva with broadly rounded apex, and by the presence of two additional, spined triangles on the seventh sternum in ♀. Moreover, *thyrsis* and *quirimbellus* (probably also *zoriandellus*) are characterized by a digitate, subapical process of the aedeagus, which is absent in *orichalcociliellus* and *aleniellus*. The corneous point of the face is almost always present in *orichalcociliellus*, but has not been observed either in *aleniellus* nor in *quirimbellus* or *zoriandellus* ; in *thyrsis* only one ♀ in the material examined has slight point. Externally, *orichalcociliellus* is practically indistinguishable in colour and pattern from the allied species.

The range of this species overlaps in central Africa with that of *aleniellus, thyrsis* and *quirimbellus*. In Kenya are known both *orichalcociliellus* and *thyrsis*.

Three of the syntypes of *argyrolepia* are referable to *aleniellus* ; they were taken in West Africa, where *orichalcociliellus* does not occur.

Type material examined. *orichalcociliellus*. Holotype ♂. ' [Tanzania] *Diatraea orichalcociliella* m. Strand det ; Type ; *Diatraea orichalcociliella* n. sp. (♂) ; Zoolog. Mus. Berlin. Fundort D. O. Afr. *Diatraea orichalcociliella* Strand. Sammler. Institut etmans. 1 Cap. (1 ins. No. 29). Gef. am Juni 12–14/1910 ', GS-2672-BM, in Institut f. Spezielle Zoologie, Berlin.

argyrolepia. LECTOTYPE ♀ (present designation). ' [Malawi] Nyasaland. Mt. Mlanje. 13.ii.1914. S. A. Neave. 1914–171 ; *Diatraea argyrolepia* type ♀ Hmpsn.', slide 1737-BM, in BM(NH) ; paralectotypes : 1 ♂, 1 ♀, same data as lectotype, GS-♂-7016-BM, ♀ not dissected ; Kola Valley, Kenya, 1 ♀ ; Weenen, South Africa, 1 ♀, GS-7009-BM ; Natal, South Africa, 1 ♀, GS-7022-BM, all in BM(NH).

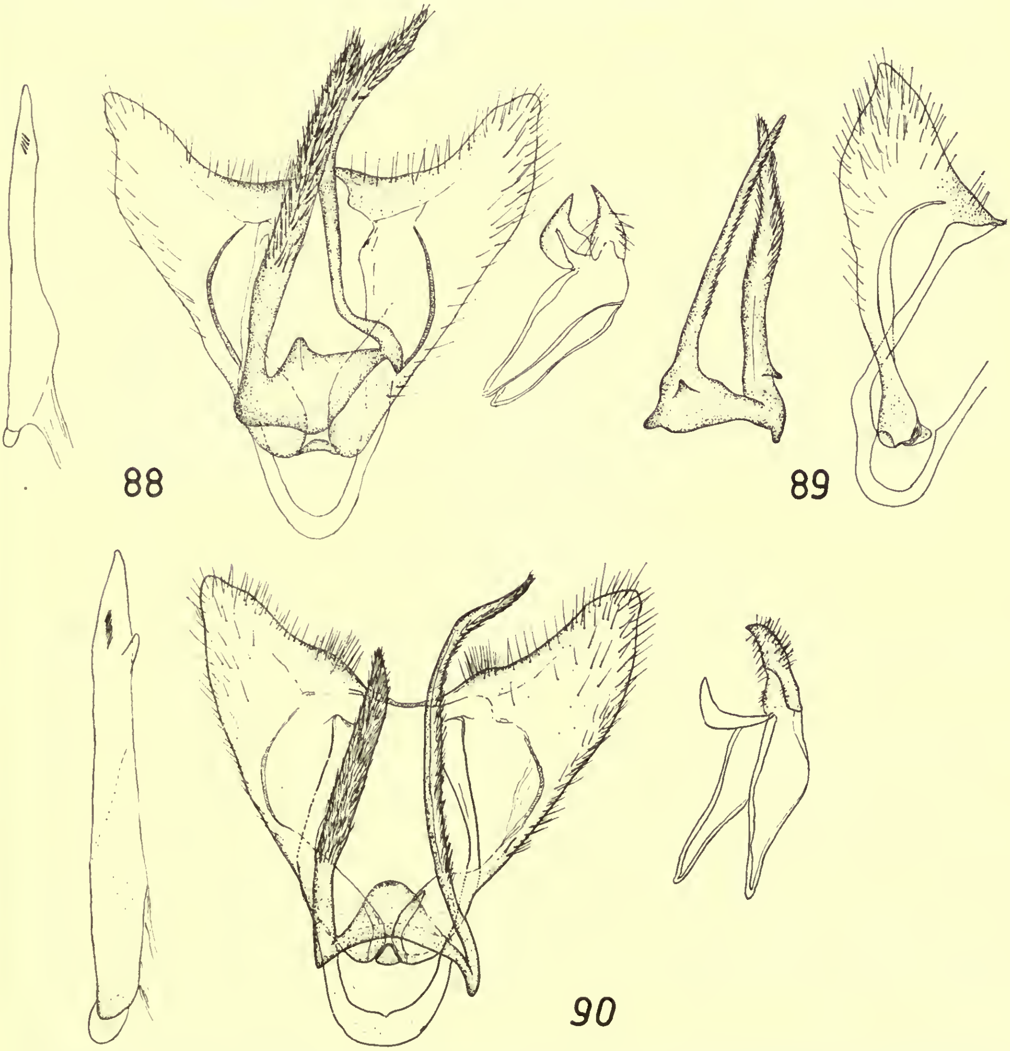
Other material. KENYA : 4 ex. bred from Maize, in author's coll. ; Mombasa, 1 ♀, in BM(NH) ; Kilifi, 1 ♀, in BM(NH). TANZANIA : 4 ex. bred from maize, in author's coll. ; Lushoto, Usambara and Soni, 3 ♂, 3 ♀, in Zoologische Sammlung d. Bayerischen Staates, Munich ; DEMOCRATIC REPUBLIC OF THE CONGO : Lusambo, Stanleyville, Kamina, Stan à Coq, Kabinda, Kapanga, Kibombo, Uvira, Pania à Mutombo, Katako-Kombe, Dimbelange and Kasai, taken in ii, iv, v, vi, vii, viii, x, xi, and xii, 15 ex., in Musée Royale de l'Afrique Centrale, Tervuren and in author's coll. ; MADAGASCAR : Betroka, 4 ♂, 5 ♀, in BM(NH) and in author's coll. ; 8 ex. in Muséum National d'Histoire Naturelle, Paris.

Chilo aleniellus (Strand)

(Text-figs 88–90, 92, 93, 101, 102)

Diatraea aleniella Strand, 1913 : 77.
Chilo aleniella (Strand) Bleszynski, 1962*b* : 112, fig. 15 [♂ genitalia].

Externally very similar to *orichalcociliellus*, except face, which scarcely protrudes forward beyond eye, broadly rounded, without point.



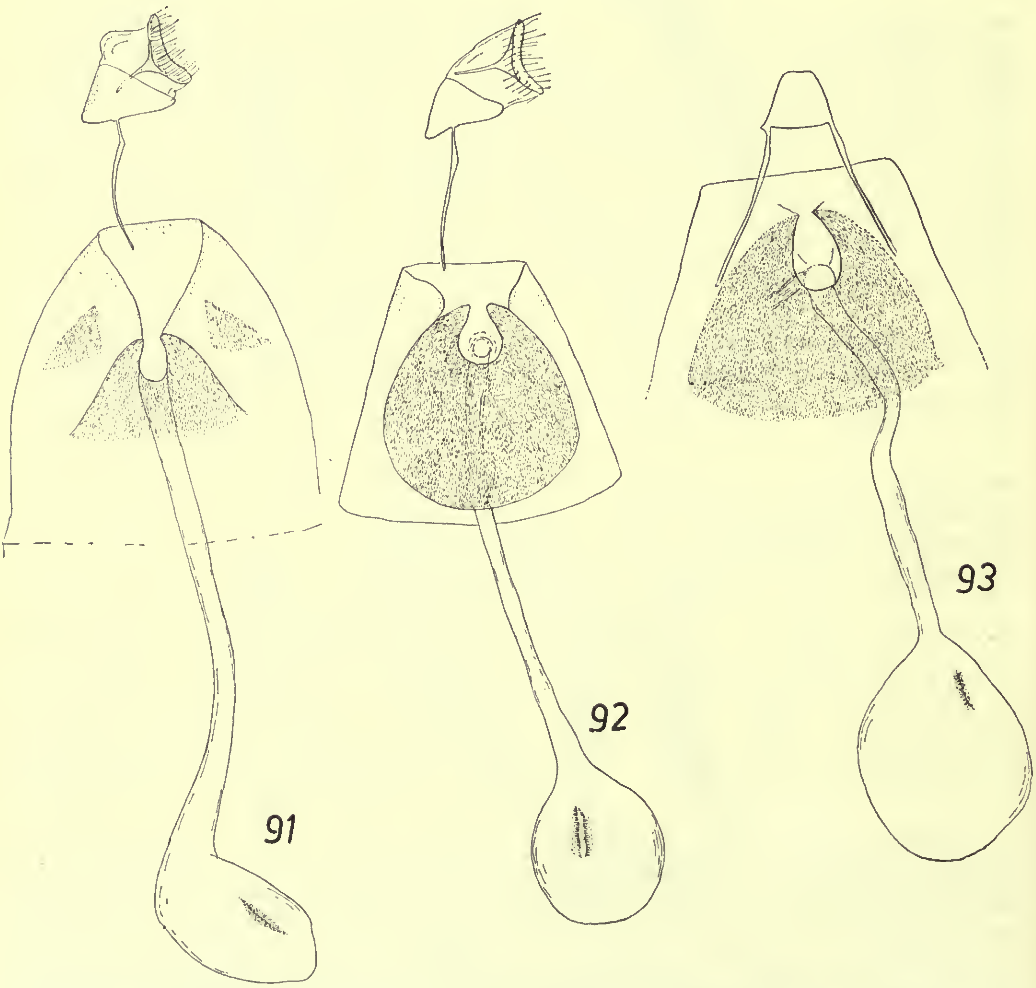
FIGS 88–90. *Chilo aleniellus*, ♂ genitalia. 88, Ghana, syntype of *argyrolepia*. 89, Spanish Guinea, holotype. 90, Congo.

♂ genitalia (Text-figs 88–90) : valva narrower than in *orichalcociliellus*, distinctly tapering caudad ; arms of juxta-plate varying in length, but always longer than in *orichalcociliellus ;* aedeagus very similar to that in *orichalcociliellus.*

♀ genitalia (Text-figs 92, 93, 101, 102) : triangular spiny patches of seventh sternum absent ; membranous window of heavily sclerotized plate of seventh sternum much larger and deeper than in *orichalcociliellus ;* plate larger ; ostial pouch lightly sclerotized in specimens from west Africa, but asymmetrical, heavily sclerotized ring in specimens from central Africa.

Distribution. Ghana ; Rio Muni ; Nigeria ; Fernando Po : Cameroon ; Democratic Republic of the Congo ; Uganda.

The problem of this species is rather strange. The specimens from Congo have the female genitalia rather distinct from those from west Africa (Text-fig. 102)



Figs 91–93. *Chilo*, ♀ genitalia. 91, *orichalcociliellus*, Mozambique. 92, *aleniellus*, Ivory Coast. 93, *aleniellus*, Nigeria.

in having a smaller " window " in the seventh sternum, much broader ductus seminalis and an asymmetrical, heavily sclerotized ring on the ostial pouch. The populations of *aleniellus* from the Democratic Republic of the Congo probably form a distinct subspecies, or perhaps they represent a separate species. Because of the variation of the female genitalia in *aleniellus*, sometimes it is not easy to separate some specimens of this species from those of *thyrsis*. The latter has the female genitalia very variable (perhaps several races are involved) as is shown in Text-figs 103, 104 and 106). However, the genital opening in *thyrsis* seems always to be larger, while being very small in *aleniellus*.

The range of *aleniellus* overlaps in central Africa that of *orichalcociliellus*, *thrysis* and *quirimbellus*. *C. orichalcociliellus* has not as yet been found in west Africa.

Type material examined. Holotype ♂. [Rio Muni] ' Alen ; Span. Guinea Benitogbt. 16–31.viii.06. G. Tessmann S. G. ; Type ; *Diatraea aleniella* ♂ Strand det. ; 2579 ; Fu.9.5/4.2 ', slide 2671-BM, in Institut f. Spezielle Zoologie, Berlin.

Other material. GHANA : Bibianaha, 1 ♂, 2 ♀ (syntypes of *Diatraea argyrolepia*), in BM(NH) ; NIGERIA : south Nigeria, 1 ♀ (syntype of *Diatraea argyrolepia*), in BM(NH) ; Warri, 3 ♀, in BM(NH) ; IVORY COAST : Abidou, 1 ♀, in Zoologische Sammlung d. Bayerischen Staates, Munich ; FERNANDO PO : 1 ♀, in BM(NH) ; CAMEROON : Efulen, 380 ex., in Carnegie Museum, Pittsburgh, Penn., U.S.A. and in author's coll. ; SIERRA LEONE : 3 ex., in BM(NH) ; UGANDA : Ruwenzori Range, Semliki Forest, 2 ♂, 1 ♀, in BM(NH) ; DEMOCRATIC REPUBLIC OF THE CONGO : Upper Uelle District, Dungu, 1 ♂, in BM(NH) ; Elisabethville and Eala, 25 ex. taken in i–iv, vi, viii, and xi, in Canadian National Collection, Ottawa, Ont., Canada, Musée Royale de l'Afrique Centrale, Tervuren, and in author's coll.

Chilo thyrsis Bleszynski

(Pl. 4, fig. 8 ; Text-figs 94, 95, 99, 103–105)

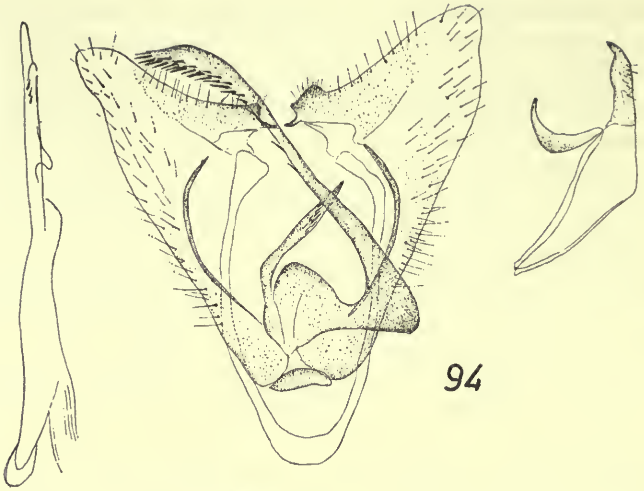
Chilo thyrsis Bleszynski, 1963 : 178, figs 59 [♂ genitalia], 60 [♀ genitalia].

Externally almost indistinguishable from *orichalcociliellus* and allies. Face variable in shape, broadly rounded ; slightly or moderately produced, in most instances without corneous point, but vestigial in one ♀ from Malawi.

♂ genitalia (Text-figs 94, 95) : similar to those in *aleniellus* except for arms of juxta-plate and aedeagus ; apical part of right arm slightly bent ; left arm much shorter than right arm, with strong apical spine and several small setae ; aedeagus with subapical digitate process.

♀ genitalia (Text-figs 99, 103, 104, 105) : very variable ; genital opening large ; ' window ' in seventh sternum varying in size, large in typical specimens from Tanzania (Text-fig. 103), or reduced in specimens from central Africa and Kenya (Text-figs 104, 106) ; spikes of seventh sternum variably developed ; in most instances covering almost whole of plate ; the latter large, distinct ; caudal margin of ostial pouch distinctly strengthened in specimens from Tanzania, otherwise ostial pouch lightly sclerotized throughout ; caudal strengthening of ostial pouch in central African specimens larger ; Kenya specimens with heavily sclerotized, slightly asymmetrical ring on ostial pouch, varying in size ; the latter in all specimens bulbose ; one elongate, scobinate signum.

Distribution. Tanzania ; Kenya ; Democratic Republic of the Congo ; Uganda ; Rhodesia.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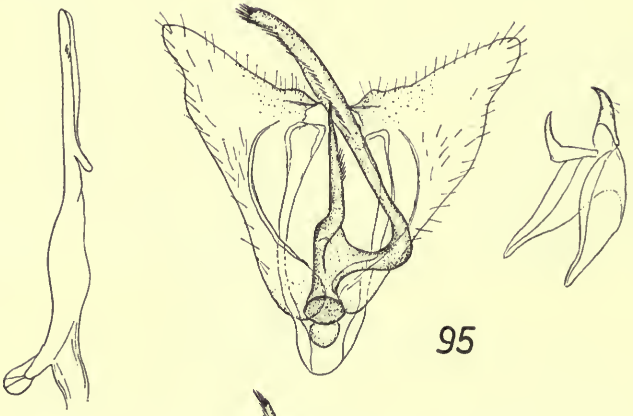
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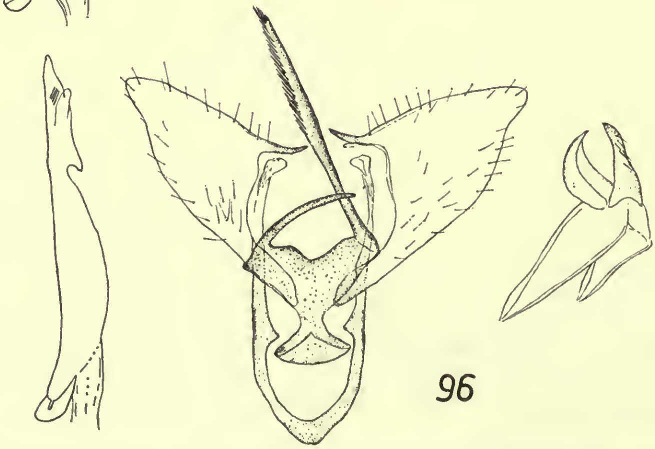
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Figs 94–96. *Chilo*, ♂ genitalia. 94, *thyrsis*, Tanzania. 95, *thyrsis* ssp. 96, *quirimbellus*, Angola, paratype.

The problem of identity of this species is difficult. Particularly it is extremely difficult to find any diagnostic characters which would distinguish ♂♂ of *thyrsis* from ♂♂ of *zoriandellus*. From *aleniellus* and *orichalcociliellus*, this species is easy to separate. *C. orichalcociliellus* has almost always a distinct corneous point on face ; valva is much wider and less tapered than in *thyrsis*, and the arms of the juxta-plate greatly differ from those in *thyrsis*, as is shown in the figures ; in the female genitalia of *orichalcociliellus* the genital opening is smaller than in *thyrsis ;* the plate of seventh sternum in *orichalcociliellus* is much shorter and accompanied by two additional small, triangular side plates clothed with spikes. The aedeagus in *aleniellus* has no subapical digitate process ; the left arm of juxta-plate is much longer than in *thyrsis* and is not terminated in a strong spine ; moreover the setae of the left arm in *aleniellus* are stronger and more numerous.

Very close to *thyrsis* are *quirimbellus* and *zoriandellus*. *C. quirimbellus* is well characterized by the straight apical part of the right arm of the juxta-plate ; moreover, the apical spine of the left arm of the juxta-plate is relatively much longer than in *thyrsis* and the central part of the juxta-plate is not so strongly developed, which is well seen in the slides made in dorso-ventral aspect. The ♀♀ of *quirimbellus* are very easily separable from those of *thyrsis* as follows : the plate of the seventh sternum has the peripheries free of spikes, which are concentrated in the central and caudal parts of the plate ; the ostial pouch has two heavily sclerotized rings which are always symmetrical ; the ostial opening is rather smaller than in *thyrsis* ; the plate of the seventh sternum forms two weak ridges commencing at the genital opening and running slightly obliquely cephalad.

The ♂♂ of *zoriandellus* are either unknown, or they are practically indistinguishable from those of *thyrsis*. Both species occur in Kibwezi, Kenya, from whence come the type-specimens of *zoriandellus*. The ♀♀ of *zoriandellus* have the caudal part of the ostial pouch broadly heavily sclerotized, the ostial pouch is always asymmetrical, and does not have another heavily sclerotized ring, which occurs in the specimens of *thyrsis* from Kenya ; the area covered with spikes of the seventh sternum, is in *zoriandellus* much smaller than in *thyrsis*.

C. thyrsis occurs in several local forms. It maybe that more than one species is involved, but probably only biological studies will clarify this obscure problem.

Type material examined. Holotype ♂. Tanzania, ' Tanganyika-Terr., Matengo-Hochland, wsw.v. Songea, 21.–31.i.'36 ; Linda, 13–1400 mm ', GS-2575-SB, in Naturhistorisches Museum, Vienna.

Paratypes. Tanzania, 56 ex. Matengo ; Nyassa Lake ; Mbamba Bai ; and Songea, GS-9847-Mus. Vind., GS-9848-Mus. Vind., GS-9849-Mus. Vind., GS-9850-Mus. Vind., GS-2572-SB, GS-2573-SB, 4168-SB, GS-4169-SB, GS-4178-SB, GS-5344-SB, and GS-6285-SB, in Naturhistorisches Museum, Vienna, and in author's coll. ; Tanzania, Morogoro, 25.v.1925, 1 ♂, bred from maize, in BM(NH).

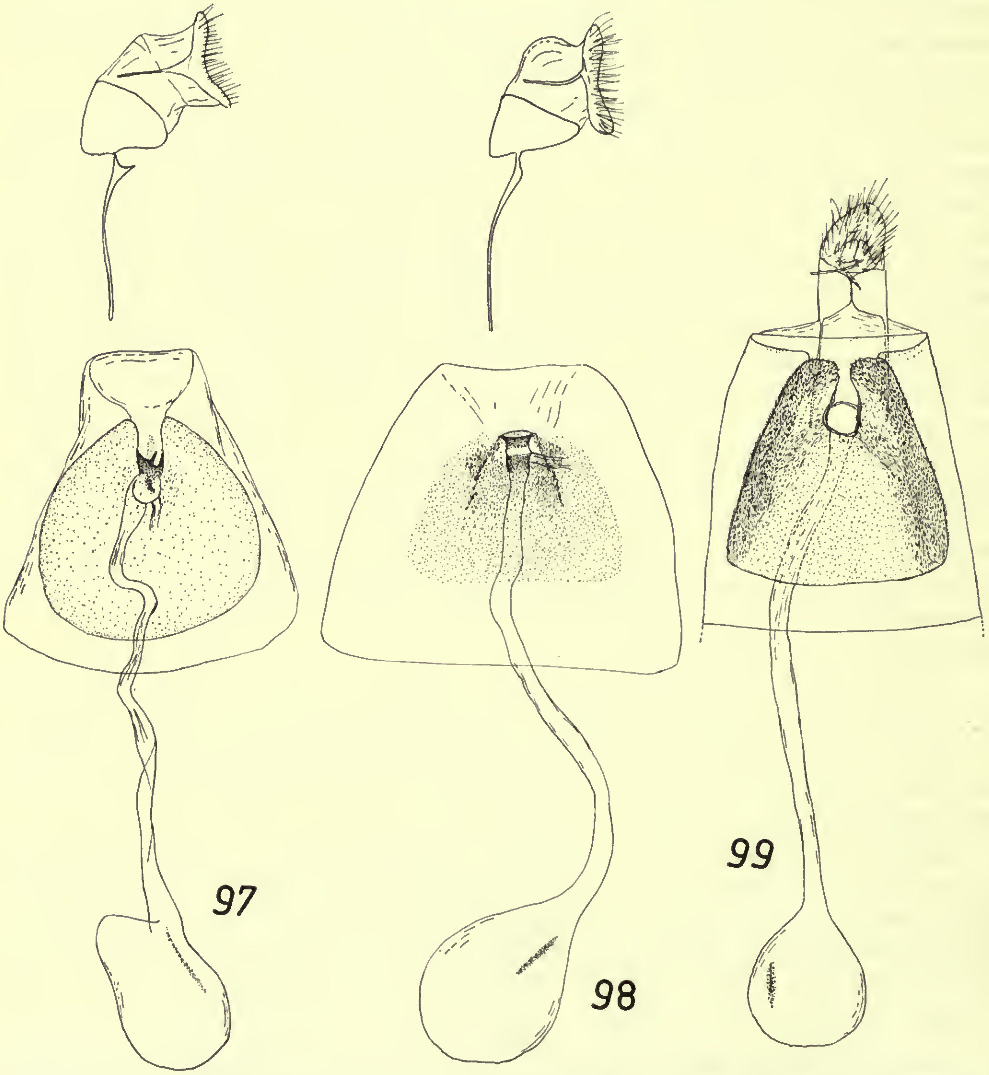
Other material. KENYA : Mtito Andei, xii.1950, 1 ♀, in BM(NH) ; Mombasa, 1 ♂, 4 ♀, in BM(NH) and in author's coll. ; Kibwezi, iv.1922, 6 ex., in BM(NH) ; RHODESIA : Fort Jameson, 4 ♀, in BM(NH) ; UGANDA : Kampala, 1 ♀, in BM(NH) ; TANZANIA : Dar-es-Salam, 1 ♀, in BM(NH) ; Nachingwea, 2 ♀, in BM(NH) ;

Democratic Republic of the Congo, Dungu, Upper Uelle District, 1 ♂, in BM(NH); Elisabethville; Kasenyi; West Kivu; Kashusha, Ituri; Nioka, i–iv and viii, 9 ex., in Musée Royale de l'Afrique Centrale, Tervuren and in author's coll.

Chilo quirimbellus sp. n.

(Text-figs 96, 98, 107)

Externally very similar to *thyrsis*, but with fore wing more heavily irrorated with brown scales; length of fore wing 8·0–12·0 mm.



Figs 97–99. *Chilo*, ♀ genitalia. 97, *zorandiellus*, Kenya. 98, *quirimbellus*, Angola, paratype. 99, *thyrsis*, Tanzania, paratype.

♂ genitalia (Text-fig. 96) : differing from those in *thyrsis* in that apical part of right arm of juxta-plate straight, apical spine of left arm of juxta-plate much longer than in *thyrsis*, central part of juxta-plate much weaker.

♀ genitalia (Text-figs 98, 107) : similar to those in *thyrsis*, except for the ostial pouch which has symmetrical double, heavily sclerotized ring ; area of spikes of seventh sternum much smaller than in *thyrsis*, forming two weak ridges, commencing at genital opening and running obliquely cephalad ; ' window ' in seventh sternum reduced ; ductus seminalis thin ; genital opening large ; one elongate, scobinate signum.

Distribution. Angola ; Democratic Republic of the Congo.

Type material examined. Holotype ♀. Angola, ' Quirimbo, 75 km. E. of P. Amboim, 300 m. 7–12 May 1934 ; (*Dr K. Jordan*) ', GS-7607-BM, in BM(NH).

Paratypes : Angola, Quirimbo, v.1934 (*Dr K. Jordan*), GS-11252-BM, 1 ♂, 12 ♀, in BM(NH) and in author's coll. ; Fazenda Congulu, Amboim, Angola, 700–800 m, 1 ♀, 12–22.iv.1934, GS-7596-BM, in BM(NH) ; N'Dalla Tando, north Angola, 2700 ft, 1 ♂, 21.xii.1908 (*Dr J. W. Ansorge*), GS-7614-BM, in BM(NH) ; N'Dalla Tando, north Angola, 1 ♀, 25.x.1908 (*Dr J. W. Ansorge*), GS-7659-BM, in BM(NH) ; Canhoca, Angola, 1 ♂, (*Dr J. W. Ansorge*), GS-7636-B6, in BM(NH) ; Benguella, Fort Quilinges, 1 ♀, 12.i.1904 (*Dr J. W. Ansorge*), GS-7658-BM, in BM(NH) ; Democratic Republic of the Congo, Lusambo, 2 ♀, 21.ii and 25.xi.1949 (*Dr M. Fontaine*), GS-6155-Sb and 6460-SB, in Musée Royale de l'Afrique Centrale, Tervuren and in author's coll. ; Democratic Republic of the Congo, Sankuru, Komi, i–ii.1930 (*J. Ghesquière*), GS-6168-SB, in Musée Royale de l'Afrique Centrale, Tervuren.

Chilo zoriandellus **sp. n.**

(Text-figs 97, 106)

Externally practically indistinguishable from *thyrsis* ; length of fore wing 9·5–12·0 mm.

♀ genitalia (Text-figs 97, 106) : genital opening large ; ostial pouch asymmetrical, with caudal part broadly heavily sclerotized and cephalic part bulbose, always lightly sclerotized. Area of spikes in plate of seventh sternum much smaller than in *thyrsis*.

The problem of ♂♂ of this species is not clear. Either the ♂ genitalia of *zoriandellus* are indistinguishable from those in *thyrsis*, or the material from Kibwezi, Kenya does not contain the males of *zoriandellus* at all.

Distribution. Kenya.

The ♀ genitalia of *thyrsis* and of *zoriandellus* are very similar, but the caudal part of the ostial pouch in *thyrsis* has only very narrow heavily sclerotized ring (in Tanzania specimens), or moderately broad (in specimens from Kenya and central Africa), while about half of the ostial pouch is heavily sclerotized in *zoriandellus*. However, the small area of spikes of the seventh sternum is diagnostic for *zoriandellus*. For more details see under *thyrsis*.

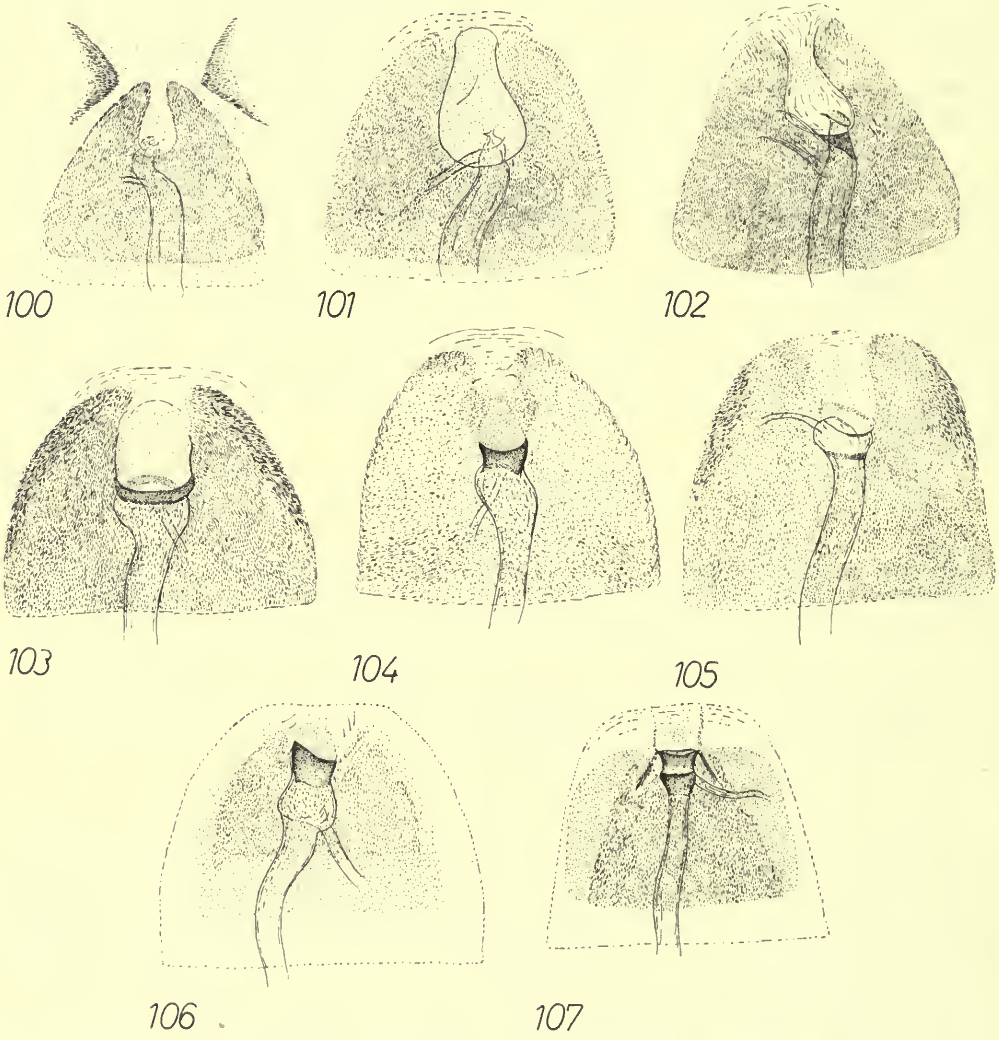
Type material examined. Holotype ♀. ' Kenya, Kibwezi, B. E. A. April 1922 (*W. Feather*) ', GS-11250-BM, in BM(NH).

Paratypes : Kenya, Kibwezi, 10 ♀, iv.1922 and xii.1918 (*W. Feather*), GS-6721-BM, GS-7655-BM, GS-11248-BM, GS-11249-BM, GS-11253-BM, GS-11254-BM, GS-11255-BM, GS-5348-BM and GS-6283-BM, in BM(NH) and in author's coll.

Chilo demotellus Walker

(Pl. 4, fig. 1 ; Text-figs 108, 110)

Chilo demotellus Walker, 1866 : 1749.
Chilo demotellus Walker ; Hampson, 1896*a* : 956 [in part].
Diatraea idalis Fernald, 1896 : 76, pl. 6, fig. 12 [adult]. **Syn. n.**
Diatraea idalis Fernald ; Fernald, *in* Dyar, 1903 : 412.
Diatraea idalis Fernald ; Forbes, 1923 : 591.



Figs 100–107. *Chilo*, seventh segments and caudal parts of ♀ genitalia. 100, *orichalcociliellus*, Katanga. 101, *aleniellus*, Kameroon. 102, *aleniellus*, ? ssp., Katanga. 103, *thyrsis*, Tanzania, paratype. 104, *thyrsis* ? ssp., Democratic Republic of the Congo, Kivu. 105, *thyrsis* ? ssp. Kenya, Kibwezi. 106, *zoriandellus*, Kenya, Mombasa. 107, *quirimbellus*, Democratic Republic of the Congo, Lusambo, paratype.

Diatraenopsis idalis (Fernald) Dyar & Heinrich, 1927 : 40, fig. 78 [♂ genitalia].
Chilo fernaldalis Dyar & Heinrich, 1927 : 40, fig. 31 [♂ genitalia]. **Syn. n.**
Diatraenopsis idalis (Fernald) ; McDunnough, 1939 : 25.
Chilo fernaldalis Dyar & Heinrich ; McDunnough, 1939 : 25.
Chilo fernaldalis Dyar & Heinrich ; Bleszynski & Collins, 1962 : 240.
Diatraea idalis Fernald ; Bleszynski & Collins, 1962 : 292.
Chilo demotellus Walker ; Bleszynski, 1965 : 20, p13, pl. 43, fig. 64 D [♂ genitalia].

Ocellus light, small, or vestigial. Face strongly produced forward, conical with sharp point ; ventral ridge absent. Labial palpus 2·5 (♂) to 3·5 (♀) times as long as diameter of eye. Fore wing : length 10·5–17·0 mm ; R_1 free ; sexual dimorphism similar to that in *phragmitellus* ; ♀ with apex of fore wing distinctly more pointed and termen more oblique than in ♂ ; ground-colour dull grey, beige or brown, ♀♀ lighter than ♂♂ ; ♂ with ill-defined subterminal and median lines formed by yellowish specks ; ♀ fore wing unicolorous ; terminal dots present in both sexes ; metallic scales absent ; fringes slightly glossy, concolorous with ground-colour. Hind wing light brown in ♂, creamy white in ♀.

♂ genitalia (Text-fig. 108) : pars basalis a distinct lobe ; juxta-plate with arms equally long, dilated posteriorly, each with subapical tooth ; aedeagus with bulbose basal projection and moderately long, hairy ventral arm ; a heavily sclerotized, posterior rod ending in a distinct spine.

♀ genitalia (Text-fig. 110) : ostial pouch moderately sclerotized, rather poorly demarcated from ductus bursae ; the latter twisted, lightly sclerotized, with swelling ; signum absent.

Distribution. U.S.A.: New Jersey, New York, Florida, Georgia.

The identity of this species has hitherto been confused. The Walker description was based on a single ♂ with no locality label ; moreover the type has the abdomen missing. However, the collection of the British Museum (N.H.) contains three additional ♂, two of which have no locality labels and one bears a label : ' Japan '. Hampson, 1896*a* : 956, gave Japan as the distribution of *demotellus*, and his opinion was certainly based on the ♂ with label ' Japan '. A comparison of the Japanese ♂ with the two other ♂ (with no locality labels) was rather difficult as the abdomen of the Japanese ♂ was partly destroyed by mildew and Dermestidae. However, a careful comparison of the structure of the face and other external characters proved that it belongs to *christophi*, and is specifically perfectly distinct from *demotellus* type and two ♂ with no locality labels. It is very likely that the type of *demotellus* and two other ♂ come from one locality as having similar labels and way of mounting. Finally my recent study of some ♂♂ of *idalis* from the collection of the American Museum of Natural History has thrown some more light on this problem. I have stated without doubt that some fresh ♂♂ of *idalis* have the transverse lines in the fore wing identical with those in the type of *demotellus*. It is of much importance to note that such yellow lines on the grey background do not appear in any other *Chilo*. A comparison of the structure of the face and the genitalia of *idalis* and the two *demotellus* proved identity of both species. I am much obliged to Dr A. B. Klots with whom I have had a discussion on the problem of the synonymy of *idalis*.

C. fernaldalis was described from three ♂ syntypes of *idalis*. Dyar & Heinrich in the description of *fernaldalis* stated that ocelli are absent in *idalis*, but they are present in *fernaldalis*. In fact, the type and the paratypes of *fernaldalis* have small ocelli. The female of *idalis* has vestigial ocelli and this was probably overlooked by Dyar & Heinrich. According to opinion of Dr. A. B. Klots and on the evidence of the variation of other *Chilo*, *fernaldalis* is conspecific with *idalis*. Consequently I consider both *idalis* and *fernaldalis* as junior synonyms of *demotellus*.

This species externally resembles somewhat *phragmitellus*, but is very different in the genitalia. In addition, *phragmitellus* has a distinct ventral ridge of the face, which is absent in *demotellus*. The ranges of the two species do not overlap.

Type material examined. *demotellus*. Holotype ♂. U.S.A. '252 ; Type', abdomen missing, in BM(NH).

idalis. Lectotype ♀ (selected by Dyar & Heinrich, 1927 : 40). 'New Jersey ; *Diatraea idalis* Fern. type ; Fernald collection', GS-28. Nov. 25 Me No. 2, in United States National Museum, Washington, D.C., U.S.A.

fernaldalis. Holotype ♂. '[Georgia] Ga (A. Oemler collector) ; *Diatraea idalis* Fern. ♂ ; Type No. 29437 U.S.N.M.', GS-21 Oct. 1925 C.H. no. 2, in United States National Museum, Washington ,D.C.

Paratypes (*fernaldalis*) : 2 ♂, Georgia, in United States National Museum, Washington, D.C.

Other material. U.S.A., New York : Long Island, 1 ♂, 10.vii, in American Museum of Natural History, New York, U.S.A. ; Georgia : Brunswick, Glenn County, 1 ♀, 29.v., in American Museum of Natural History, New York ; Florida : Pensacole, 1 ♀, in American Museum of Natural History, New York ; no locality, probably U.S.A., 2 ♂, in BM(NH).

Chilo plejadellus Zincken

(Pl. 5, fig. 6 ; Text-figs 109, 111)

Chilo plejadellus Zincken, 1821 : 251.
Jartheza sabulifera Walker, 1863 : 185 [syn. Fernald, 1896 : 78].
Crambus plejadellus (Zincken) Zeller, 1863 : 26.
Diphryx prolatella Grote, 1882 : 273 [syn. Fernald, 1896 : 78].
Chilo oryzeellus Riley, 1882 : 135, pl. 7, fig. 1 [syn. Fernald, 1896 : 78].
Chilo plejadellus Zincken ; Fernald, 1896 : 78, pl. 5, figs 10, 11 [adults], text-fig. 3 [adult, larva, pupa].

Ocellus well developed. Face strongly protruding forward beyond eye, conical, with distinct point ; ventral ridge absent. Labial palpus 4 times as long as diameter of eye. Fore wing : length 9·0–15·0 mm ; R_1 free ; ground-colour dull yellow, variably dusted with brown scales ; median line with some lustrous golden brown scales ; subterminal line formed by series of lustrous metallic, golden scales ; terminal dots distinct ; fringes strongly shiny golden, in some specimens darker than ground-colour. Hind wing white.

♂ genitalia (Text-fig. 109) : valva greatly elongate with apex rounded ; pars basalis absent ; arms of juxta-plate equally long, each with subapical tooth ; aedeagus with long, hairy, apically pointed, ventral arm ; bulbose basal process small ; cornuti absent.

♀ genitalia (Text-fig. 111) : ostial pouch well demarcated from ductus bursae, heavily sclerotized, about twice as broad as ductus bursae ; the latter with heavily sclerotized elongate patch inside ; one very distinct, narrow, elongate signum (almost as long as half length of corpus bursae).

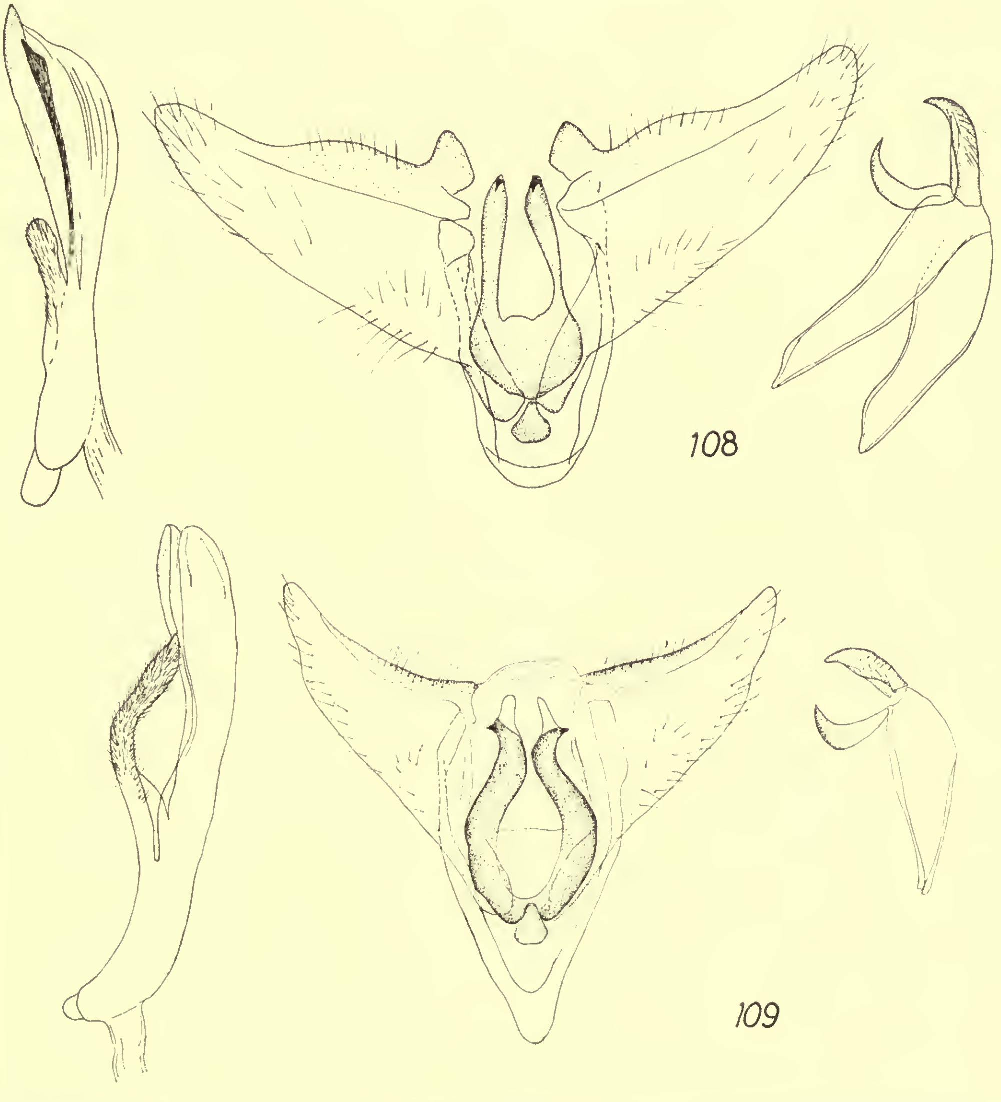
Riley (1882) gave an account of the biology of this species. The larva was found to be a stem-borer of rice. The adults are on the wing in August until the beginning of September.

Distribution. Canada : Ontario and Quebec ; U.S.A.: Pennsylvania, Georgia, Louisiana and Wisconsin.

The type of *plejadellus*, Savannah, Georgia, U.S.A.; is lost.

Type material examined. *sabulifera*. Holotype ♂. '39.I.19.1388 ; *sabulifera* m.', GS-7031-BM, in BM(NH).

prolatella. Holotype ♀. '*Diphryx prolatella* G. ; [Wisconsin] Wis ; L', abdomen missing, in BM(NH).



Figs 108–109. *Chilo*, ♂ genitalia. 108, *demotellus*, U.S.A., Georgia, paralectotype of *idalis* (holotype of *fernaldalis*). 109, *plejadellus*, Canada, Quebec.

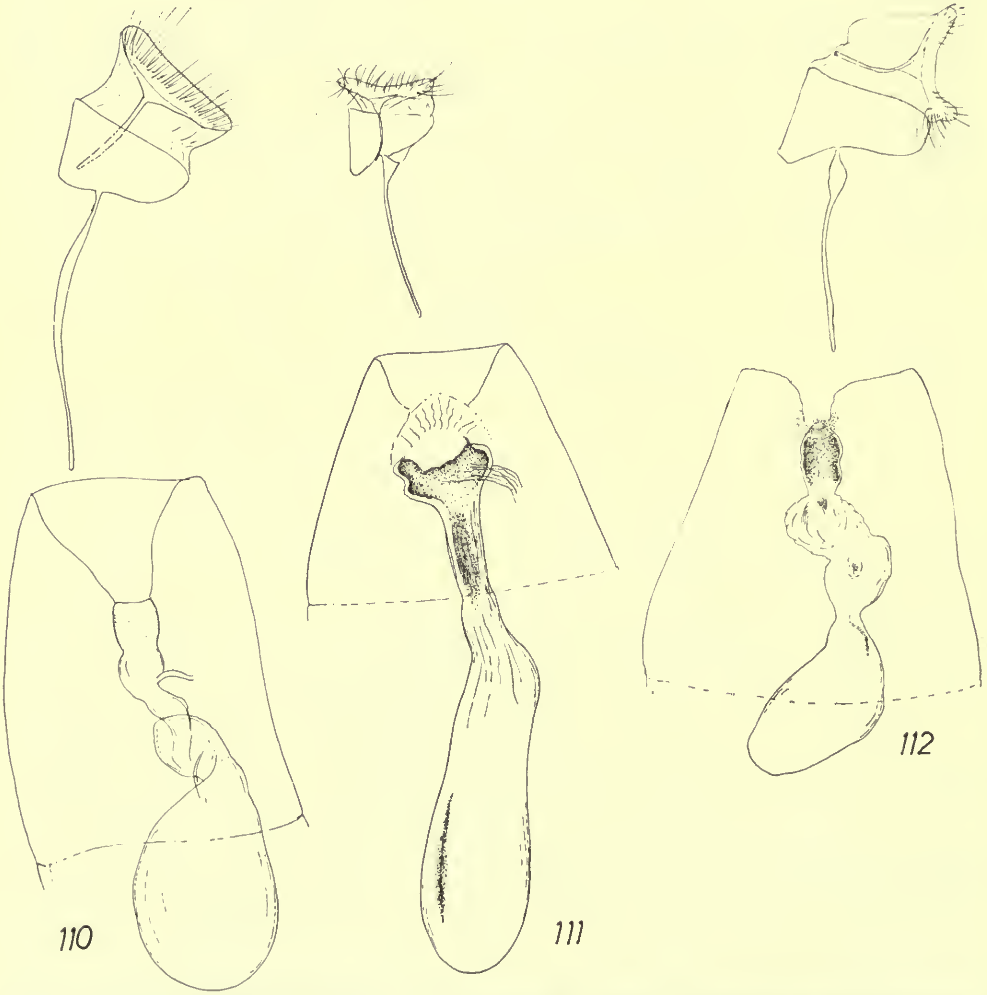
oryzeellus. Holotype ♂. ‘ Borer in stem of rice. Aug. 25–81 ; *Chilo oryzeellus* Riley type ; Type No. 3740 U.S.N.M.’, in United States National Museum, Washington, D.C.

Other material. CANADA : Trenton, Ontario, 2 ♂, 1 ♀, in Canadian National Collection, Ottawa, Ont., Canada ; Quebec, 1 ♂, in author's coll. ; U.S.A.: 1 ♂, 1 ♀, in BM(NH).

Chilo erianthalis Capps

(Text-figs 112, 113)

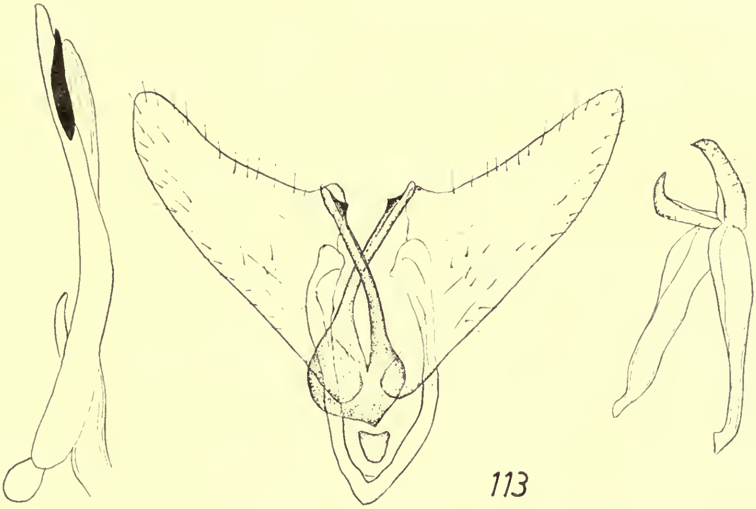
Chilo erianthalis Capps, 1963 : 31, figs 1 [adult], 2 [♀ genitalia], 3, 3a [♂ genitalia].



FIGS 110–112. *Chilo*, ♀ genitalia. 110, *demotellus*, U.S.A., New Jersey, lectotype of *idalis*. 111, *plejadellus*, Canada, Ontario. 112, *erianthalis*, U.S.A., Louisiana, paratype.

Ocellus fully developed. Face strongly protruding forward beyond eye, conical with distinct corneous point ; ventral ridge vestigial. Labial palpus about 3·5 times as long as diameter of eye. Fore wing : length 11·0–13·0 mm ; R_1 free ; ground-colour dull brown with very slight violet reddish hue, heavily dusted with fuscous ; veins and intervenular spaces edges with light beige, giving the wing a lined appearance ; subterminal line very close to termen, slightly dentate in costal portion, consisting of series of silvery, metallically shiny scales ; median line formed by some patches of metallically cupreous scales ; terminal dots distinct ; fringes shiny. Hind wing grey-beige.

♂ genitalia (Text-fig. 113) : pars basalis vestigial ; arms of juxta-plate somewhat longer and thinner than in *plejadellus* ; aedeagus with distinct, bulbose, basal projection ; ventral projection vestigial, ending well before middle of aedeagus ; one large cornutus.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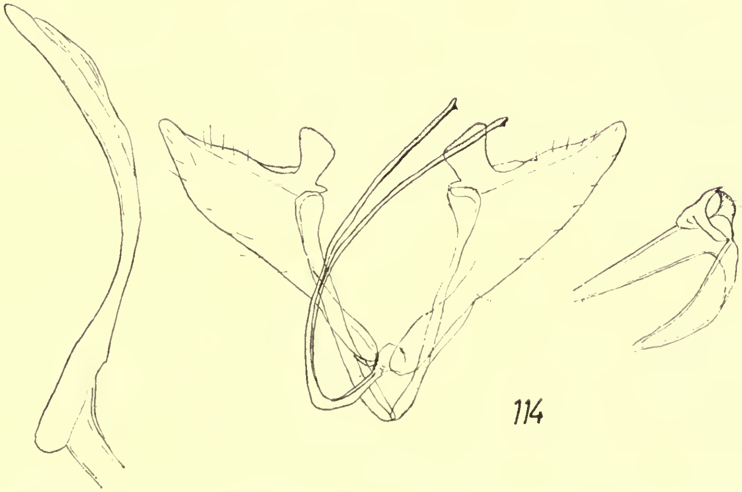
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FIGS 113–114. *Chilo*, ♂ genitalia. 113, *erianthalis*, U.S.A., Florida, 114, *chiriquitensis*, Mexico, Yucatan.

♀ genitalia (Text-fig. 112) : seventh sternum without heavily sclerotized plate ; ostial pouch moderately sclerotized ; ductus bursae shorter than corpus bursae, constricted near middle ; signum slightly scobinate situated near mouth of corpus bursae.

Larva feeds on *Erianthus*.

Distribution. U.S.A.: Louisiana and Florida.

Type material examined. Holotype ♂. ' [Louisiana] Host Erianthus, loc. Port Blarre (La.), Jan. 1, 61 ♂, R. A. Agarwal ; Type No. 66663 U.S.N.M.', GS-15144-H. W. Capps.

Paratypes. 4 ♀, same locality, one GS-15145-H. W. Capps ; all in United States National Museum, Washington, D.C., U.S.A.

Other material. U.S.A.: Myrtle Grove, Florida, 1 ♀, 5.v., in American Museum of Natural History, New York, U.S.A. ; Oneco, Manate County, Florida, 4 ♂, iii, in coll. Prof. J. G. Franclemont, Ithaca, N.Y., U.S.A. and in author's coll.

Chilo chiriquitensis (Zeller)

(Pl. 2, fig. 1 ; Text-figs 114–118)

Eromene chiriquitensis Zeller, 1877 : 70, pl. 1, fig. 25.
Silveria adelphilia Dyar, 1925 : 11 [syn. Dyar & Heinrich, 1927 : 32].
Silveria hexhex Dyar, 1925 : 11 [syn. Bleszynski, 1967 : 92].
Silveria chiriquitensis (Zeller) Dyar & Heinrich, 1927 : 31, figs 43 [♀ genitalia], 44 [♂ genitalia].
Silveria hexhex Dyar ; Dyar & Heinrich, 1927 : 31, fig. 45 [♀ genitalia].
Chilo chiriquitensis (Zeller) Bleszynski, 1962*b* : 117, pl. 13, fig. 5 [adult].
Chilo chiriquitensis (Zeller) ; Bleszynski, 1967 : 92, 100.

Ocellus well developed. Labial palpus 2·5 (♂) to 3·0 (♀) times as long as diameter of eye. Face broadly rounded ; corneous point and ventral ridge both absent. Fore wing : length 6·5–8·5 mm ; R_1 confluent with *Sc* ; ground-colour dull white, dusted with dark brown scales ; discal dot absent ; median line very distinct, almost perpendicular to costa, uniform from costa to termen, metallically shiny, silvery, edged with an equally distinct, but broader, ochreous line distally ; subterminal line concolorous with medial line, also very distinct, broadly excurved, close to termen, edged at either side with ochreous ; terminal dots very distinct ; fringes shiny, with golden basal stripe. Hind wing whitish.

♂ genitalia (Text-fig. 114) : pars basalis very distinct, trapezoidal ; juxta-plate with two strongly curved, very long, thin, equally long arms, each of these armed with apical strengthening terminated by a little tooth ; aedeagus strongly angulate, much longer than valva plus saccus, thin ; cornuti absent ; ventral arm and basal projection absent.

♀ genitalia (Text-figs 115–118) : ductus bursae proportionately long and broad ; signum absent ; genitalia variable.

Distribution. Mexico, Colima, Yucatan, Sinaloa ; Panama ; Guatemala.

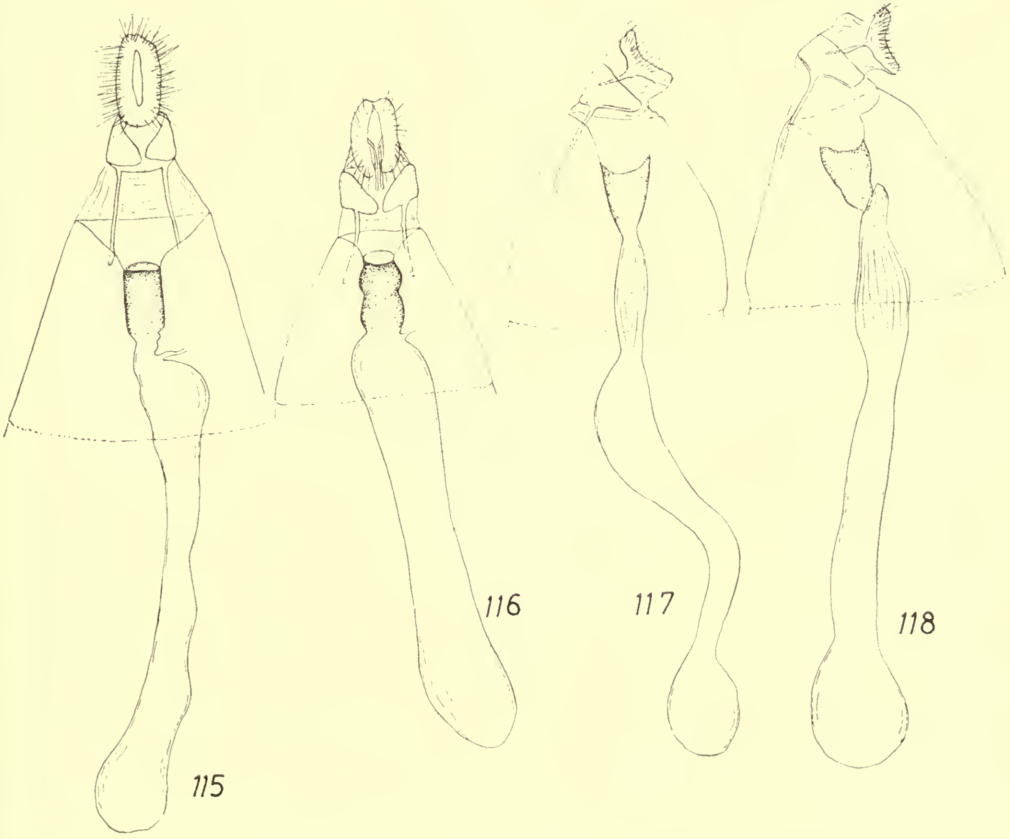
Dyar and Heinrich (1927 : 32) stated that *hexhex* differs from *chiriquitensis* in the differently shaped ductus bursae and the black irrorations along the veins of the fore wing, but those characters have no diagnostic value as they are subject to individual variation (confirmed by Dr A. B. Klots, in litt.).

Type material examined. *chiriquitensis*. Holotype ♀. ' Panama *Eromene chiriquitensis* Z. ; 897 ; Chiriqui Ribbe ; Origin. ; Type ', GS-598-SB, in Institut f. Spezielle Zoologie, Berlin.

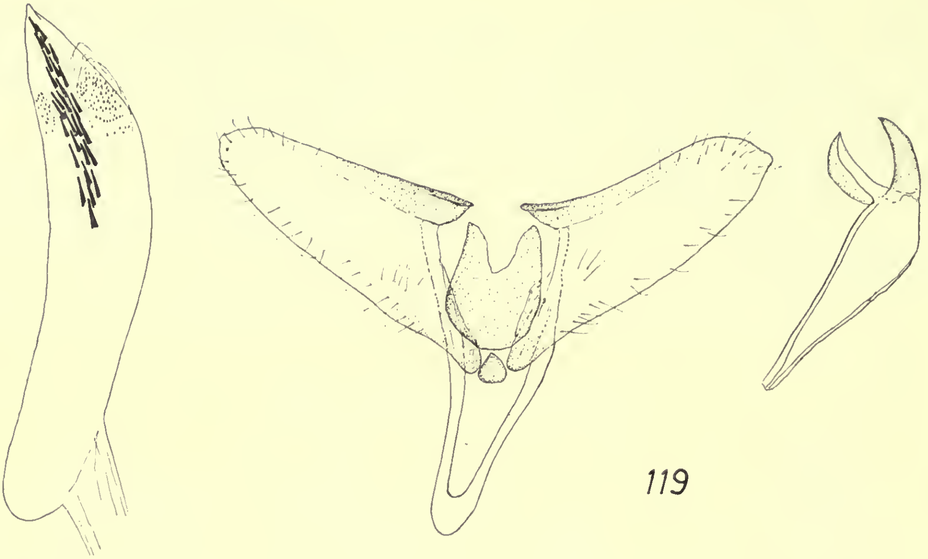
adelphilia. Holotype ♂. ' Mexico, Colima Mex. ; July 1923 ; R. Müller collector ; 14570 ; Type No. 27508 U.S.N.M. ; ♂ genitalia slide 15. Jan. 1926 Me No. 3 ; *Silveria adelphilia* Dyar ', in United States National Museum, Washington, D.C., U.S.A.

hexhex. LECTOTYPE (present designation) ♀. ' Mexico, Colima Mex. ; July 1293 ; R. Müller collector ; Type No. 27506 U.S.N.M. ; ♀ genitalia slide 15. Jan. 1926 ME No. 7 ; *Silveria hexhex* Dyar ' ; paralectotype : Colima, Mexico, 1 ♀ ; both in United States National Museum, Washington, D.C., U.S.A.

Other material. MEXICO : Sinaloa, Venadio, 7 ♀, in United States National Museum, Washington, D.C., U.S.A. ; Yucatan, Chichen Itza, 1 ♂, 18.vi.1954, in coll. A. B. Klots, New York, U.S.A. ; 1 ♀, in author's coll. ; GUATEMALA : 1 ♀, in author's coll.



FIGS 115–118. *Chilo chiriquitensis*, ♀ genitalia. 115, Mexico, Colima, paratype of *hexhex*. 116, Mexico, Venadio. 117, Mexico, Campecha. 118, Mexico, Yucatan.



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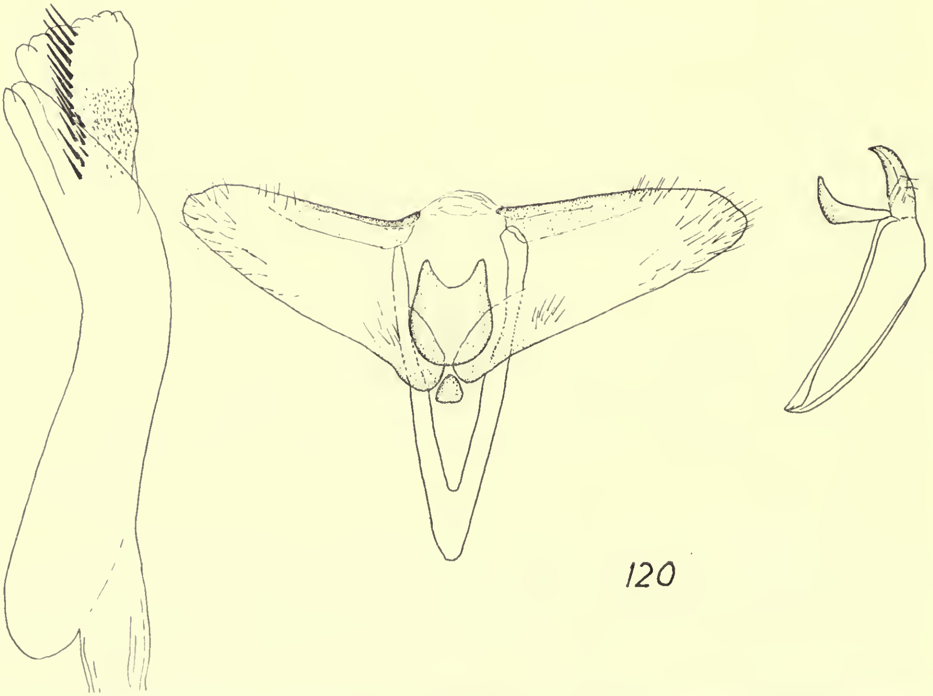

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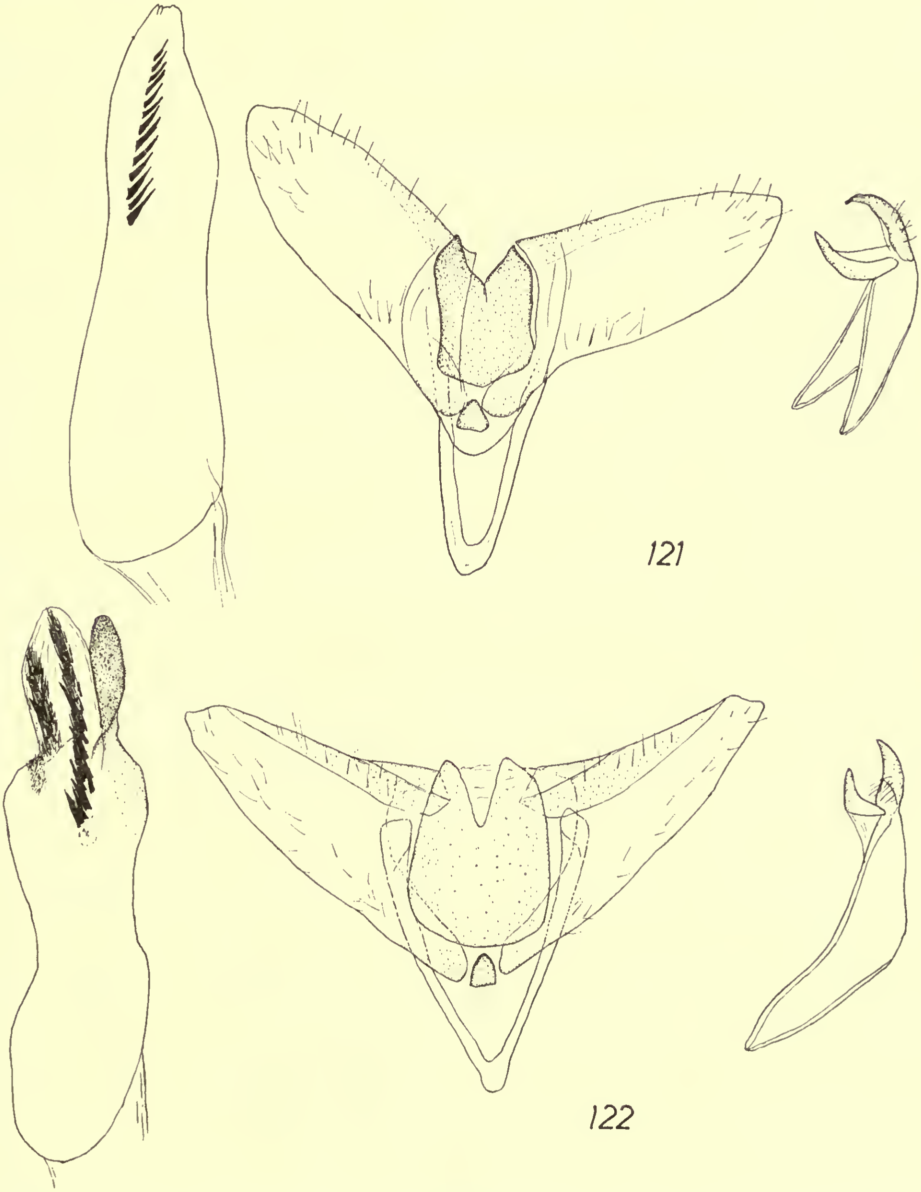
FIGS 119–120. *Chilo sacchariphagus*, ♂ genitalia. 119, *sacchariphagus sacchariphagus*, Madagascar. 120, *sacchariphagus sacchariphagus*, Philippines, Luzon.

Chilo sacchariphagus sacchariphagus (Bojer)

(Text-figs 119–121, 125, 126)

Proceras sacchariphagus Bojer, 1856. [Pagination un-numbered.]
Borer saccharellus Guenée, 1862. [Pagination un-numbered.] [Syn. Tams, 1942 : 67.]



FIGS 121–122. *Chilo sacchariphagus*, ♂ genitalia. 121, *sacchariphagus sacchariphagus*, Java, lectotype of *striatalis*. 122, *sacchariphagus indicus*, India.

Chilo mauriciellus Walker, 1863 : 141. [syn. Tams, 1942 : 67].
Chilo venosatus Walker, 1863 : 144. **Syn. n.**
Diatraea striatalis Snellen, 1890 : 98, pl. 2, figs 1–4. [syn. Hampson, 1896*b* : 953].
Diatraea striatalis Snellen ; Snellen, 1891 : 349, pl. 19, figs 1–4.
Diatraea mauriciella (Walker) Hampson, 1896*b* : 953.
Diatraea venosata (Walker) Hampson, 1896*b* : 954.
Diatraea mauriciella (Walker) ; Vinson, 1941 : 148.
Proceras sacchariphagus Bojer ; Tams, 1942 : 67.
Diatraea mauriciella (Walker) ; Vinson, 1942 : 39.
Proceras sacchariphagus Bojer ; Kapur, 1950 : 412, pl. 6, figs 2, 4, 9 [♂ genitalia], 11 [♀ genitalia].
Proceras venosatus (Bojer) Kapur, 1950 : 413 [in part], pl. 6, figs 1, 5, 8 [♂ genitalia], [*nec* figs 6 and 12, which are referable to *sacchariphagus stramineellus*].
Proceras sacchariphagus Bojer ; Kalshoven, 1950 : 411, figs 232 [larva], 234 [pupa].
Proceras venosatus Bojer ; Bleszynski, 1962*a* : 9 [in part] [*nec* fig. of ♀ genitalia, which is referable to *sacchariphagus stramineellus*].
Chilo sacchariphagus (Bojer) Bleszynski, 1966 : 494.
Chilo sacchariphagus (Bojer) ; Bleszynski, 1969 : 18, figs 7 [♂ genitalia], 40 [♀ genitalia], 70 c [imago], 70 d [larva].

Ocellus reduced. Face rounded, not protruding forward beyond eye ; corneous point and ventral ridge both absent. Labial palpus 3 (♂) to 4 (♀) times as long as diameter of eye. Fore wing : R_1 confluent with *Sc* ; length 12·0–18·0 mm, maximum width 4·5–6·0 mm ; apex acute ; ground-colour dull light brown ; veins and interneural spaces outlined with whitish beige ; discal dot distinct, often double ; terminal dots present ; transverse lines absent ; fringes slightly glossy, concolorous or lighter than the ground-colour. Hind wing dirty white to light brown in ♂, silky whitish in ♀.

♂ genitalia (Text-figs 119–121) : valva slightly tapering to a rounded apex, which is very slightly concave ; pars basalis absent ; juxta-plate short, broad, deeply notched, arms tapered without teeth ; saccus V-shaped ; aedeagus variable in width ; ventral arm and basal process both absent ; row of strong tapering cornuti present and subapical large patch of scobinations absent.

♀ genitalia (Text-figs 125, 126) : Ostial pouch rather well demarcated from ductus bursae, heavily sclerotized, broad ; ductus bursae with heavily sclerotized longitudinal ribs ; corpus bursae greatly elongate, longer than ductus bursae, with large area of scobinations.

This species is a major pest of sugar-cane in Indonesia, Mauritius, India (ssp. *indicus*), Formosa and China (ssp. *stramineellus*). Most data on the early stages and biology are referable to ssp. *indicus* and ssp. *stramineellus*.

Distribution. Indonesia, Borneo, Java, Bali, Sumatra, Celebes ; Singapore ; Malaya ; Philippines ; Madagascar ; Mauritius ; Reunion. The populations in Madagascar, Reunion and Mauritius have probably been introduced by man.

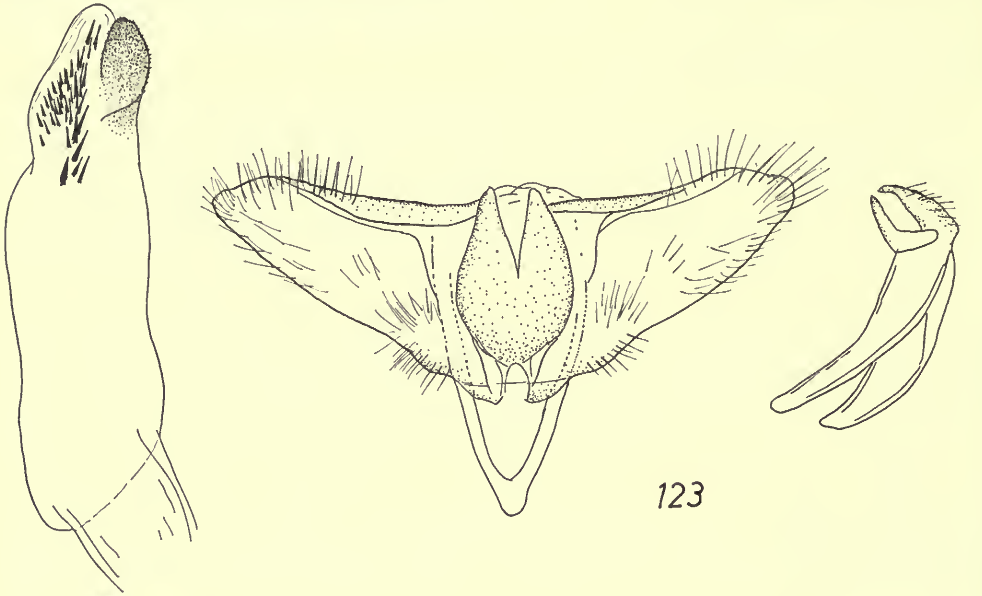
The identity of this species has for a long time been uncertain as several names are involved and the variation in the genitalia of both sexes is considerable. Until 1942 the species was known as *Diatraea mauriciella* (Walk.). Hampson (1896*b* : 953) considered it distinct from *Diatraea striatalis* Snell., which he cited as a synonym of the *venosatus* Walk. Vinson, in 1942, synonymized *striatalis* with *mauriciella*, and he regarded *venosatus* from India as a distinct species. In 1942, Tams revived the name *Proceras sacchariphagus* Bojer for the sugar-cane borer from Mauritius. Fletcher & Ghosh (1921), Fletcher (1928) and Gupta (1940), Isaac & Rao (1941) and Isaac & Venkatraman (1941) used the name *Diatraea venosata* for the Indian population, which has subsequently been described by Kapur (1950) as *Proceras indicus*.

Kalshoven (1950) mentioned correctly this species from Indonesia as *Proceras sacchariphagus*. The present author (1962*a* : 9) sank *Argyria stramineella* Car. under *Proceras venosatus* (Walk.), but this was incorrect, as *stramineellus* is a distinct subspecies of *sacchariphagus*. In 1965, the present author recorded *Proceras venosatum* from China but the diagnosis and figures of the genitalia are of ssp. *stramineellus*. In 1966, I transferred *sacchariphagus*, *venosatus* and *indicus* to *Chilo* and sank *Proceras* under *Chilo*. After a study of the genitalia of a series of specimens from China, Formosa, Philippines, Indonesia, Malaya, Madagascar, India, Reunion and Mauritius I concluded that:

All populations belong either to one widely spread species, or to several phylogenetically very young species. The differences in the genitalia of the populations of *sacchariphagus*, *stramineellus* and *indicus* are rather slight, and considerable individual variation is present. The populations from China and Formosa agree in genitalia (except for slightly differently shaped saccus in the ♂ genitalia) and differ from those from Indonesia and the Philippines. In the ♂ genitalia of the specimens from China and Formosa the aedeagus is wider and has an apical patch of small cornuti and scobinations ; moreover the saccus in the specimens from China is truncate ; in the ♀ genitalia the ductus bursae consists a heavily sclerotized, elongate patch. The aedeagus in the specimens from Indonesia and Philippines is thinner and lacks the apical scobinations ; in the ♀ genitalia the ductus bursae lacks the sclerite, but shows distinct longitudinal ribbing absent in the specimens from China and Formosa. The genitalia of the holotype of *Diatraea striatalis* (Java) agree with those in the specimens from Sumatra and other localities in Indonesia (except aedeagus which is slightly broader), and I consider *striatalis* as conspecific with *venosatus*, the holotype of which (from Borneo, Sarawak) has no abdomen. The opinion that *venosatus* occurs in China has no logical basis. The synonymy of *sacchariphagus*, *mauriciella* and *striatalis* seems to be correct, and accordingly, *venosatus* is here sunk under *sacchariphagus*. The species was most probably introduced to Madagascar, Mauritius and Reunion. It is of interest to note that the genitalic differences between populations from Madagascar, Reunion, Mauritius and from Indonesia are weaker, than between Indonesian specimens and those from China, Formosa, or from India. The specimens from the Philippines are slightly different in the genitalia of both sexes from the Indonesian specimens, but I consider them all as representatives of *sacchariphagus sacchariphagus*. It is also important to note that the ranges of the three forms do not overlap, indicating that they probably belong to one species.

It has also to be noted that very slight differences between the female genitalia in the specimens from Madagascar and from Mauritius were found. Then, the ductus bursae in the ♀♀ from the Philippines is slightly more constricted than in the ♀♀ from Indonesia and Madagascar, Mauritius and Reunion.

The isolation of the individual populations has resulted in slight genitalic differences, while the external appearance of the moths was unchanged. Under such circumstances, in spite of existing constant genitalic differences, the distinctness of *stramineellus* and *indicus* might seem rather doubtful. In *indicus* the aedeagus is broader than in *sacchariphagus*, is terminated in a heavily sclerotized and minutely spined oval, elongate projection, and the cornuti are arranged in two distinct elongate patches. *C. sacchariphagus sacchariphagus* lacks the terminal projection and the cornuti are arranged in one patch. In *C. sacchariphagus stramineellus* the aedeagus is also thick, but the terminal projection is weaker. So far I have not found any constant differences between the female genitalia of *sacchariphagus sacchariphagus* and *sacchariphagus indicus*, except the ductus bursae seems to be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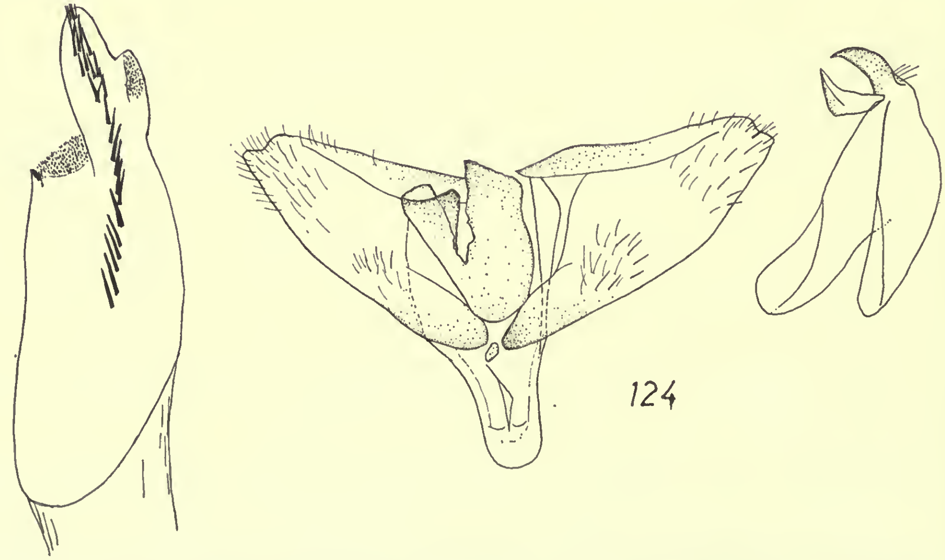
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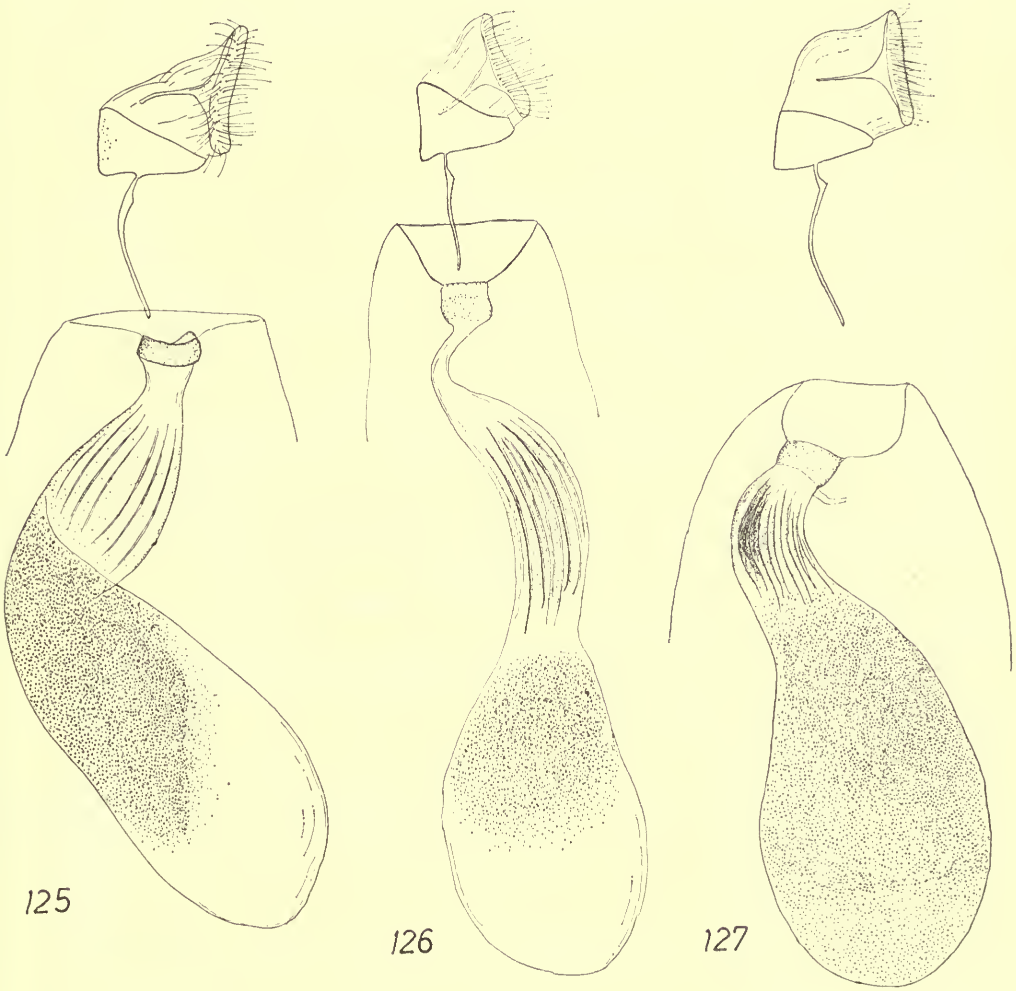
FIGS 123–124. *Chilo sacchariphagus* ♂ genitalia. 123, *sacchariphagus indicus*, India. 124, *sacchariphagus stramineellus*, China.

shorter in *sacchariphagus indicus* and the corpus bursae more heavily scobinate ; however, in view of the variation of the female genitalia of *sacchariphagus*, and the small number of examined ♀♀ of *sacchariphagus indicus*, those differences can not be considered as diagnostic. It is of much importance to note that from some localities especially in Indonesia, only single specimens are available for study which sometimes bring more confusion than clarification to the matter.

Type material examined. *sacchariphagus sacchariphagus*. NEOTYPE ♂ (present designation). (Detailed text of the labels received from P. L. Viette, Paris) : '*Diatraea striatalis* Snell. Île Maurice. De la canne à sucre ; coll. E. L. Ragonot, Museum



FIGS 125–127. *Chilo sacchariphagus* ♀ genitalia. 125, *sacchariphagus sacchariphagus*, West Celebes. 126, *sacchariphagus sacchariphagus*, Philippines, Luzon. 127, *sacchariphagus indicus*, India.

Paris ; GS-4904 ♂ Chilo sacchariphagus Boj. det. Bleszynski '65 ', in Muséum National d'Histoire Naturelle, Paris.

striatalis. Lectotype ♂ (selected by Kapur, 1950 : 413). [Indonesia] ' Java Tegal ♂ Lucay ; *Diatraea striatalis* Snellen Lectotype made by : A. P. Kapur 1949 ', GS-4514-SB, in Museum van Natuurlijke Historie, Leiden.

Other material. MALAYA : Perak, 1 ♂, in BM(NH) ; Singapore, 1 ♂, in BM(NH) ; INDONESIA : West Sumatra, 1 ♂, in BM(NH) ; Celebes, 1 ♂, in author's coll. ; PHILIPPINES : Luzon, Benguet and Passay Rizal, 6 ex., v and xii, in BM(NH) and in author's coll. ; Luzon, Los Banos, 2 ♂, in United States National Museum, Washington, D.C., U.S.A. ; MAURITIUS : 2 ♂, in BM(NH) 4 ex. in author's coll. ; REUNION : 1 ♂, in Muséum National d'Histoire Naturelle, Paris ; MADAGASCAR : 6 ex., in Muséum National d'Histoire Naturelle, Paris, and in author's coll.

Chilo sacchariphagus stramineellus (Caradja) **stat. n., nom. rev.**

(Pl. 4, fig. 5 ; Text-figs 124, 128–130)

Argyria stramineella Caradja, 1926 : 168.
Diatraea venosata (Walker) ; Shibuya, 1928*b* : 51, pl. 4, fig. 28.
Proceras venosatus (Walker) ; Kapur, 1950 : 413 [in part], pl. 6, figs 6, 10 [♂ genitalia], ? fig. 12 [♂ genitalia].
Proceras venosatus (Walker) ; Bleszynski, 1962*a* : 9 [in part], pl. 6, fig. 24 [♂ genitalia].
Proceras venosatum (Walker) ; Bleszynski, 1965 : 123 [in part], pl. 5, fig. 65 [adult], pl. 43, fig. 65 [♂ genitalia], pl. 94, fig. 65 [♀ genitalia].
Chilo venosatus Walker ; Bleszynski, 1969 : 16 [in part], figs 5 [♂ genitalia], 38 [♀ genitalia].

Externally strikingly similar to *sacchariphagus sacchariphagus*.

♂ genitalia (Text-figs 124) : aedeagus broader than in typical subspecies, with apical scobinations which are absent in *sacchariphagus sacchariphagus*. In ♂♂ from China the saccus is truncate, but in those from Formosa it is V-shaped, similar to typical subspecies. One row of cornuti.

♀ genitalia (Text-figs 128–130) : ductus bursae decidedly twisted with an elongate, distinct sclerite lacking in typical subspecies ; ostial pouch always very broad.

Takano (1934, 1937, 1940) and Takahashi (1938) gave brief accounts of the biology of this subspecies in Formosa.

Distribution. China: Shantung, Kiangsu, Fokien, Kwangtung ; Formosa.

Type material examined. Holotype ♀. ' [China] Tsingtau ', GS-1692-SB, in Muzeul Grigorie Antipa, Bucharest.

Other material. CHINA : Shantung, Tsinan, 1 ♀, in BM(NH) ; I-Shang, 1 ♀, in BM(NH) ; Shantung, Taishan, 1550 m, 8 ex., in Museum A. Koenig, Bonn and in author's coll. ; Pekin, 1 ♂, in author's coll. ; FORMOSA : 8 ex., in BM(NH) and in author's coll.

Chilo sacchariphagus indicus (Kapur) **stat. n.**

(Text-figs 122, 123, 127)

Diatraea venosata (Walker) ; Fletcher & Ghosh, 1920 : 388.
Diatraea venosata (Walker) ; Gupta, 1940 : 803, fig. 4 [larva], pl. 36, figs 3 a, b [wing-neuration], pl. 37, figs 5, 6 [♂ genitalia].

Diatraea venosata (Walker) ; Isaac & Rao, 1941 : 800, pls 42, 43, 45 [larva].
Diatraea venosata (Walker) ; Isaac & Venkatraman, 1941 : 808, pl. 46, fig. 5, pl. 48, figs 5–8 [pupa].
Proceras indicus Kapur, 1950 : 414, pl. 6, figs 3, 7 [♂ genitalia], 13 [♀ genitalia].
Chilo indicus (Kapur) Bleszynski, 1966 : 493.
Chilo indicus (Kapur) ; Bleszynski, 1969 : 6, figs 6 [♂ genitalia], 39 [♀ genitalia].

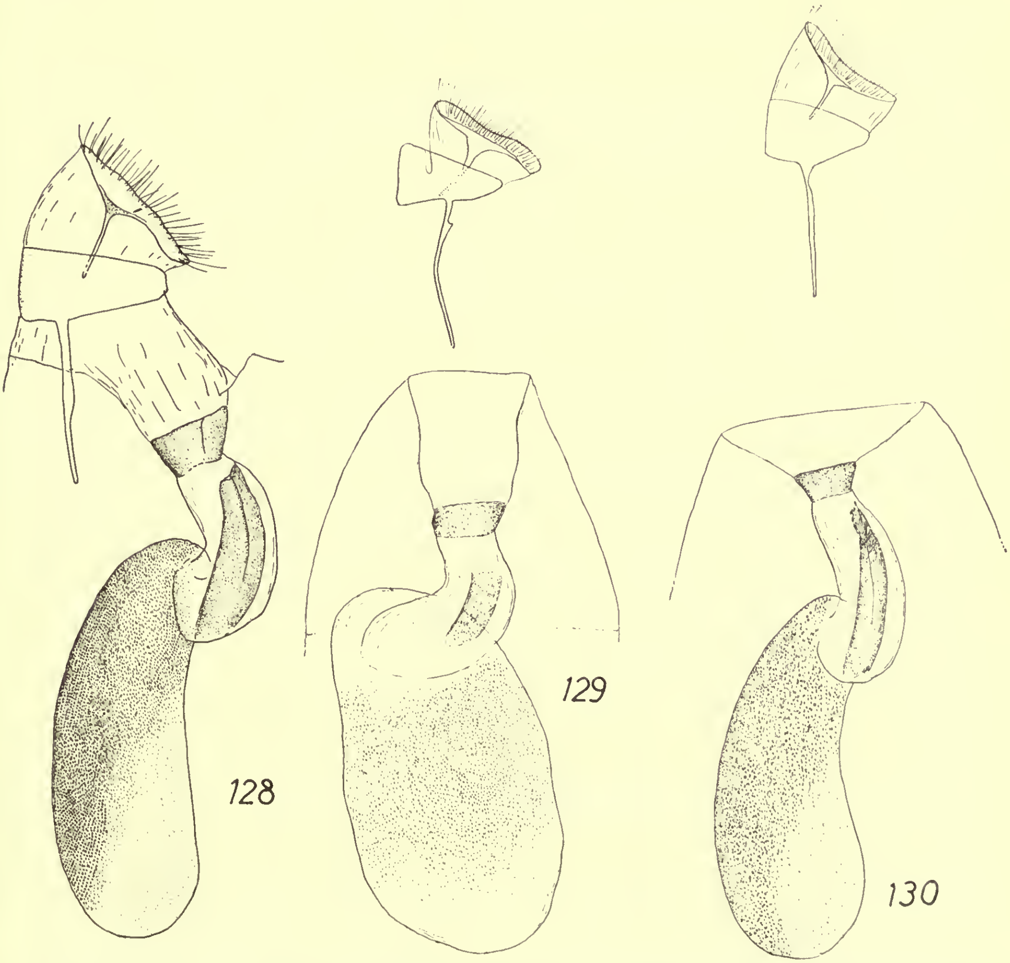
Externally strikingly similar to *sacchariphagus sacchariphagus*.

♂ genitalia (Text-figs 122, 123) : aedeagus broader than in *sacchariphagus sacchariphagus* and terminated in oval, elongate, heavily sclerotized projection ; cornuti arranged in two distinct patches.

♀ genitalia (Text-fig. 127) : similar to those in *sacchariphagus sacchariphagus*.

This subspecies is reported also to be a pest of sugar-cane.

Distribution. India : Assam, Bihar and Madras.



FIGS 128–130. *Chilo sacchariphagus stramineellus* ♀ genitalia. 128, China, holotype. 129, China. 130. China.

According to Kapur, the 8 ♂♀ paratypes are in the collection of the Indian Museum, Calcutta. For full details on the taxonomy of this subspecies see comments under *sacchariphagus sacchariphagus*.

Type material examined. Holotype ♂. 'India Cage No. 4 on Sugar Cane. Pusa Bihar 15.v.14. R. S.', GS-598-BM, in BM(NH).

Paratypes, India, 6 ♂♀, in BM(NH).

Other material. INDIA : 1 ♂, in Canadian National Collection, Ottawa, Ont., Canada.

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—— 1963. Studies on the Crambidae (Lepidoptera). Part 40. Review of the genera of the family Crambidae with data on their synonyms and types. *Acta zool. cracov.* **8** : 91–132.

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The late Dr. Stanislaw Bleszynski
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Department of Entomology,
British Museum (Natural History),
London, S.W.7.

PLATE 1

Fig. 1, *Chilo pulverosellus*, ♀, Bulgaria.
Fig. 2, *C. partellus*, ♂, Tanzania.
Fig. 3, *C. partellus*, ♀, India.
Fig. 4, *C. orichalcociliellus*, ♀, South Africa.
Fig. 5, *C. mesoplagalis*, ♂, Nigeria.
Fig. 6, *C. costifusalis*, ♀, Malawi.
Fig. 7, *C. tumidicostalis*, ♂, India.
Fig. 8, *C. argyropasta*, ♂, Tanzania.
Fig. 9, *C. costifusalis*, ♂, Angola.
Fig. 10, *C. terrenellus*, ♂, Vulcan Island.
Fig. 11, *C. luniferalis*, ♂, Democratic Republic of the Congo.
Fig. 12, *C. costifusalis* ♂, Tanzania.

PLATE 2

Fig. 1, *Chilo chiriquitensis*, ♀, Guatemala.
Fig. 2, *C. lousiadalis*, ♂, New Guinea.
Fig. 3, *Leonardo davincii*, ♀, Senegal. [Not included in text.]
Fig. 4, *C. polychrysus*, ♂, Malaya.
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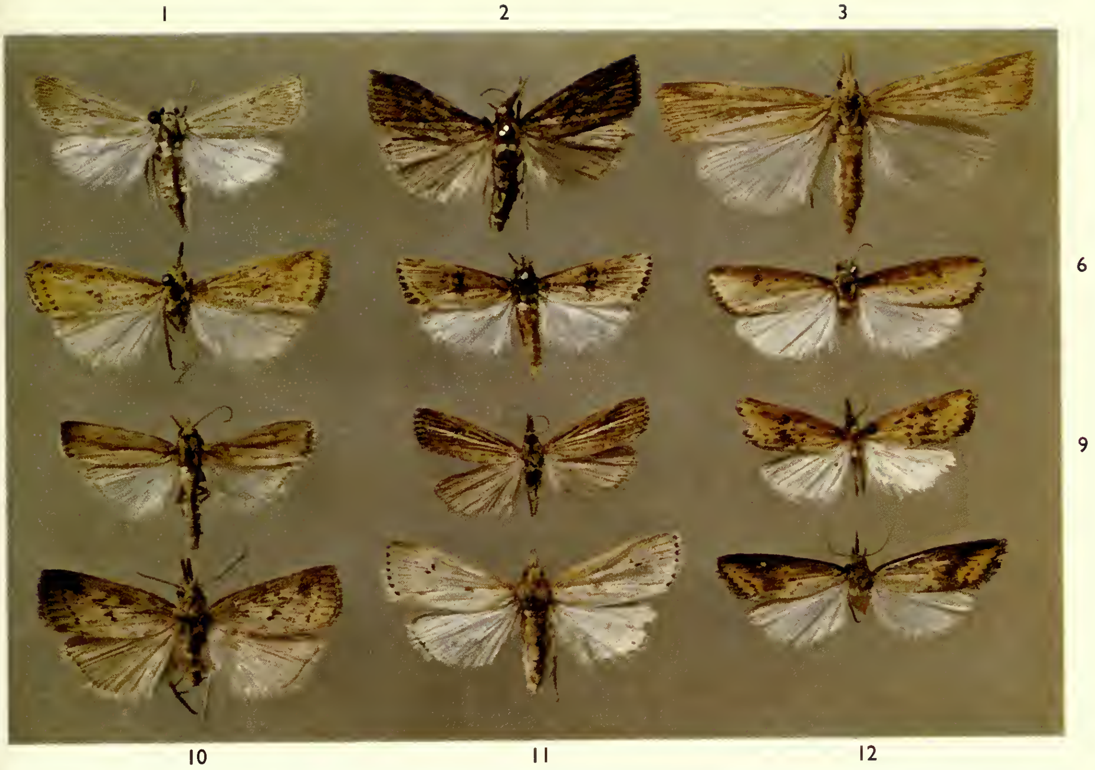
Fig. 11, *C. diffusilineus*, ♂ paratype of *phaeosema*, Malawi.
Fig. 12, *C. ceylonicus*, ♂, Ceylon.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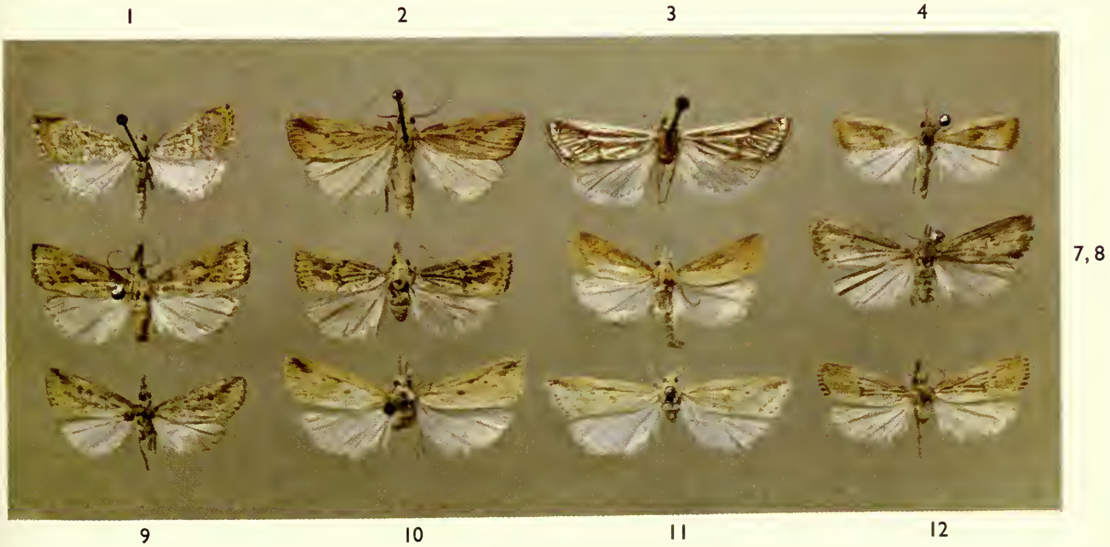
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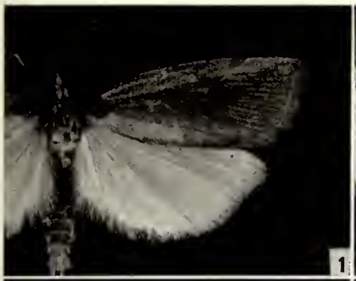
PLATE 2

PLATE 3

Fig. 1, *Chilo phragmitellus*, ♂, Hungary.
Fig. 2, *C. phragmitellus*, ♀, Hungary.
Fig. 3, *C. luteellus*, ♀, Algeria.
Fig. 4, *C. suppressalis*, ♂, China.
Fig. 5, *C. suppressalis*, ♀, China.
Fig. 6, *C. hyrax*, ♂, holotype, East Asia, Ussuri.
Fig. 7, *C. hyrax*, ♀, paratype, East Asia, Ussuri.
Fig. 8, *C. christophi*, ♂, paratype, China.
Fig. 9, *C. christophi*, ♀, paratype, Central Asia, Thian-Shan.
Fig. 10, *C. infuscatellus*, ♂, India.
Fig. 11, *C. infuscatellus*, ♀, Afghanistan.
Fig. 12, *C. infuscatellus*, ♀, Vulcan Island.
Fig. 13, *C. partellus*, ♀, Kenya.
Fig. 14, *C. ceylonicus*, ♀, Hainan.
Fig. 15, *C. polychrysus*, ♀, India.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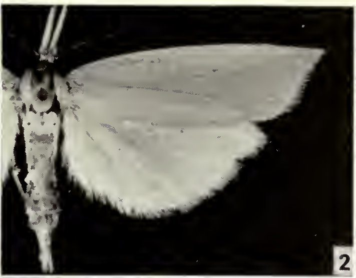
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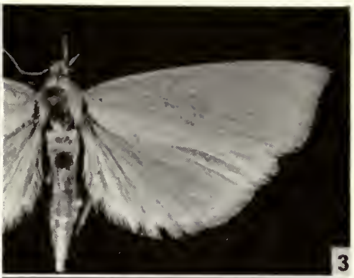
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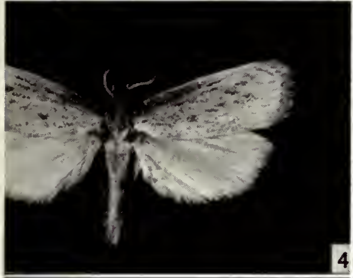
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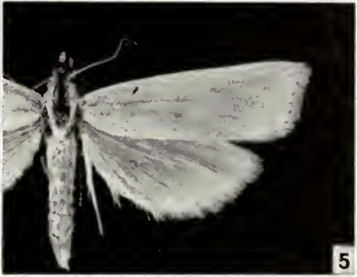
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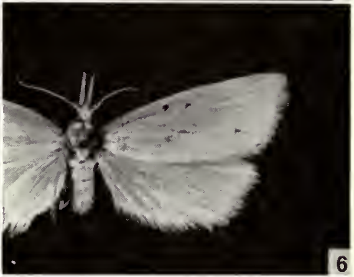
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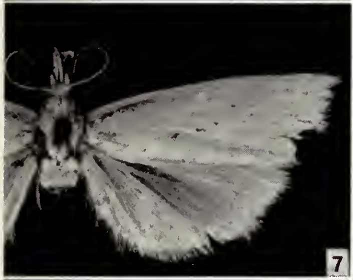
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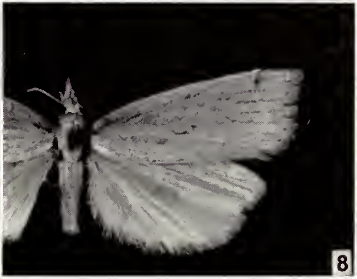
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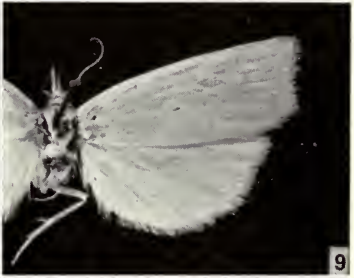
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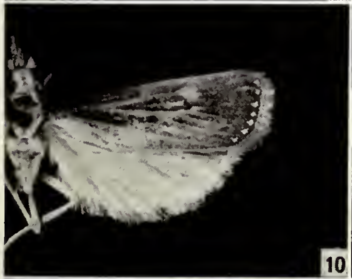
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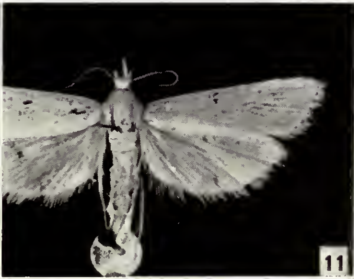
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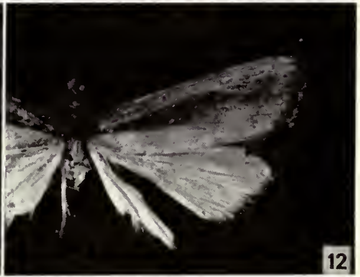
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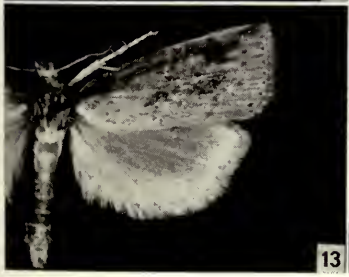
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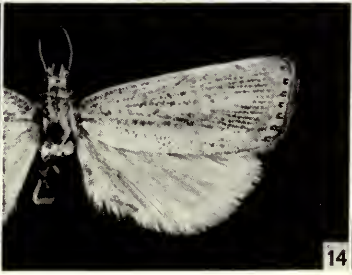
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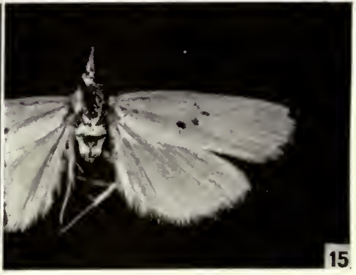
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PLATE 4

Fig. 1, *Chilo demotellus*, locality unknown, ♂.
Fig. 2, *C. terrenellus*, ♂, Louisiade Arch.
Fig. 3, *C. terrenellus*, ♀, Louisiade Arch.
Fig. 4, *C. lousiadalis*, ♀, Louisiade Arch.
Fig. 5, *C. sacchariphagus stramineellus*, ♂, China.
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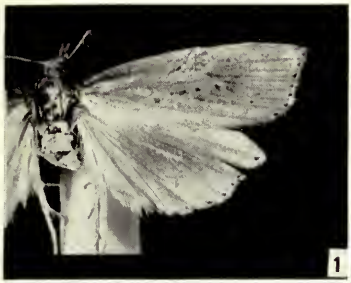
Fig. 9, *C. costifusalis*, ♀, paralectotype, Nigeria.
Fig. 10, *C. agamemnon*, ♀, Egypt.
Fig. 11, *C. pulveratus*, ♀, Philippine Is.
Fig. 12, *C. pulveratus*, ♀, Philippine Is.
Fig. 13, *C. zacconius*, ♂, holotype, Senegal.
Fig. 14, *C. incertus*, ♀, Sudan.
Fig. 15, *C. perfusalis*, ♀, paralectotype, Nigeria.
Fig. 16, *C. argyropastus*, aberrant ♂, Tanzania.
Fig. 17, *C. argyropastus*, aberrant ♂.
Fig. 18, *Chilandrus chrysistes*, ♀, Ceylon. [Not included in text.]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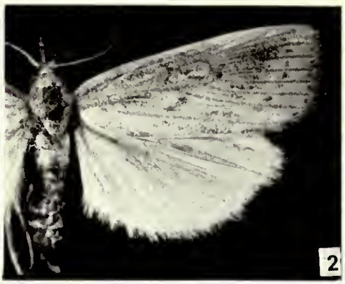
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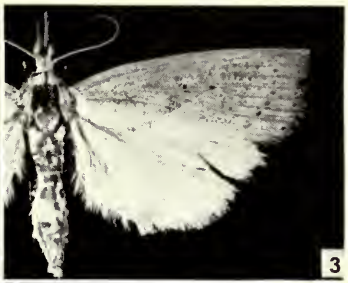
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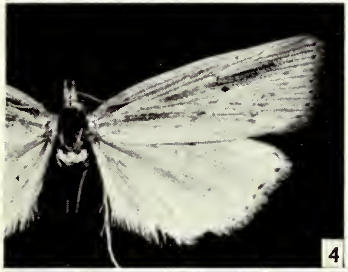
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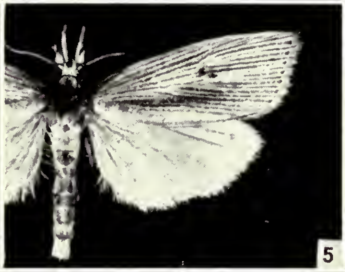
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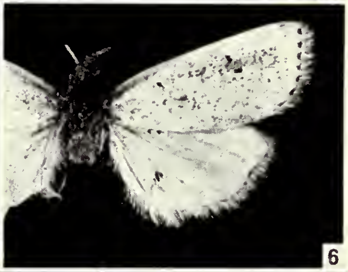
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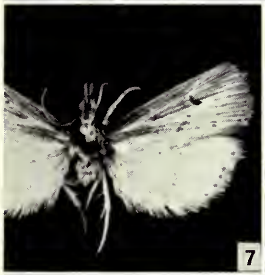
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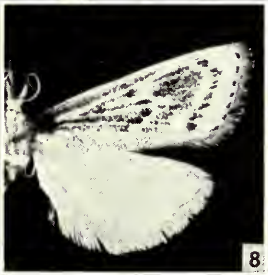
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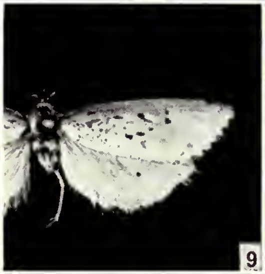
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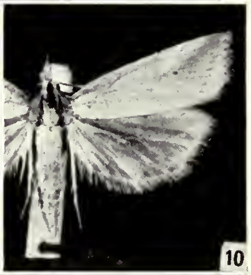
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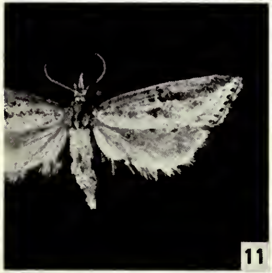
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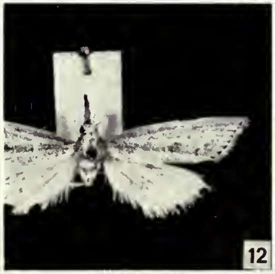
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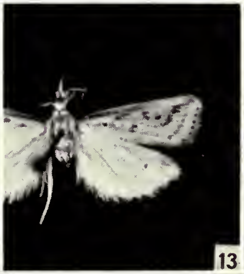
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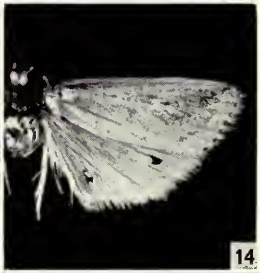
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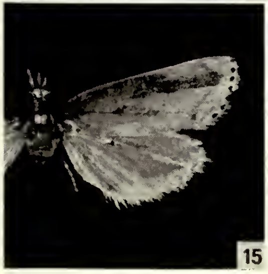
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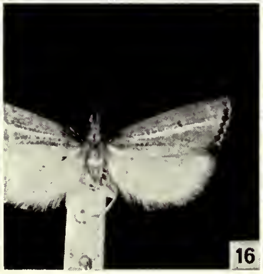
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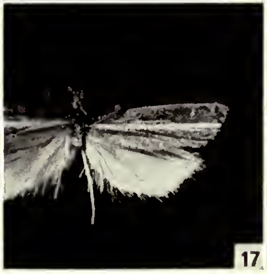
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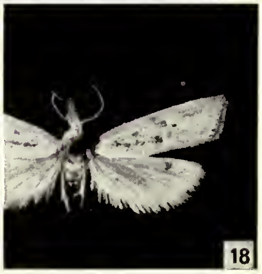
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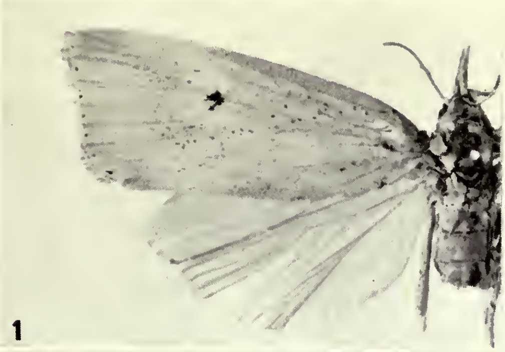
PLATE 5

Fig. 1, *Chilo tamsi*, ♀, holotype, India.
Fig. 2, *C. crypsimetallus*, ♀, holotype, Australia, Cedar Bay.
Fig. 3, *C. zacconius*, ♀, paratype, Nigeria.
Fig. 4, *C.* sp. ♀, Kenya.
Fig. 5, *C. psammathis*, ♂ lectotype of *perpulverea*, Nigeria.
Fig. 6, *C. plejadellus*, ♀, holotype of *prolatella*, U.S.A., Wisconsin.
Fig. 7, *C. mercatorius*, ♂, holotype, Democratic Republic of the Congo.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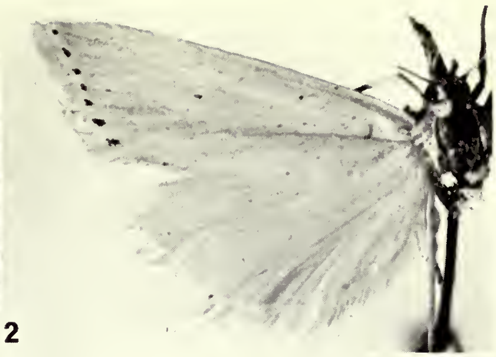
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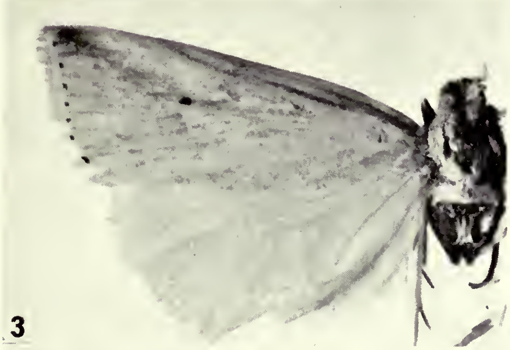
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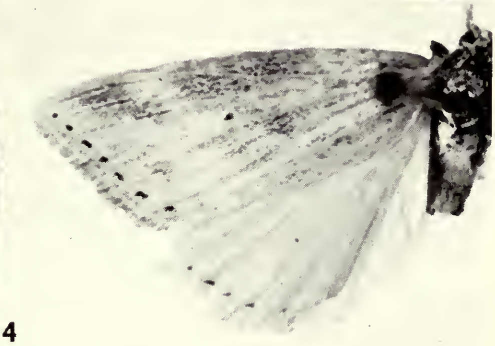
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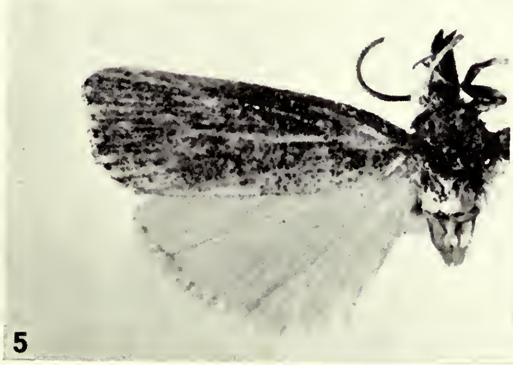
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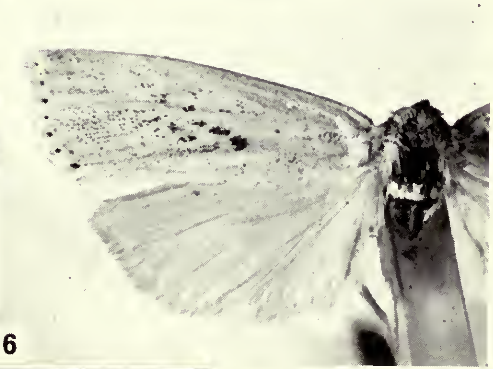
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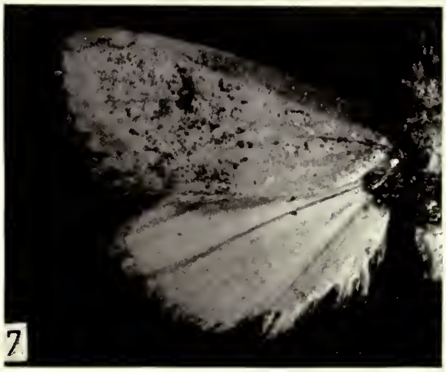
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20 OCT 1970
R
NATURAL HISTORY

V. G. L. van SOMEREN

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
ENTOMOLOGY Vol. 25 No. 5
LONDON: 1970

REVISIONAL NOTES ON AFRICAN *CHARAXES* (LEPIDOPTERA: NYMPHALIDAE)

PART VI

BRITISH MUSEUM
20 OCT 1970
NATURAL HISTORY

BY

VICTOR GURNER LOGAN van SOMEREN
The Sanctuary, Ngong
P.O. Box 24947, Karen, Kenya

Pp. 197–250; 6 *Maps*, 11 *Plates*

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
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REVISIONAL NOTES ON AFRICAN *CHARAXES* (LEPIDOPTERA : NYMPHALIDAE)

PART VI

By V. G. L. van SOMEREN

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SYNOPSIS

The species and their subspecies are dealt with, one new subspecies and a new form are described and one new name is given in place of a *nomen oblitum*, and one name has been synonymized.

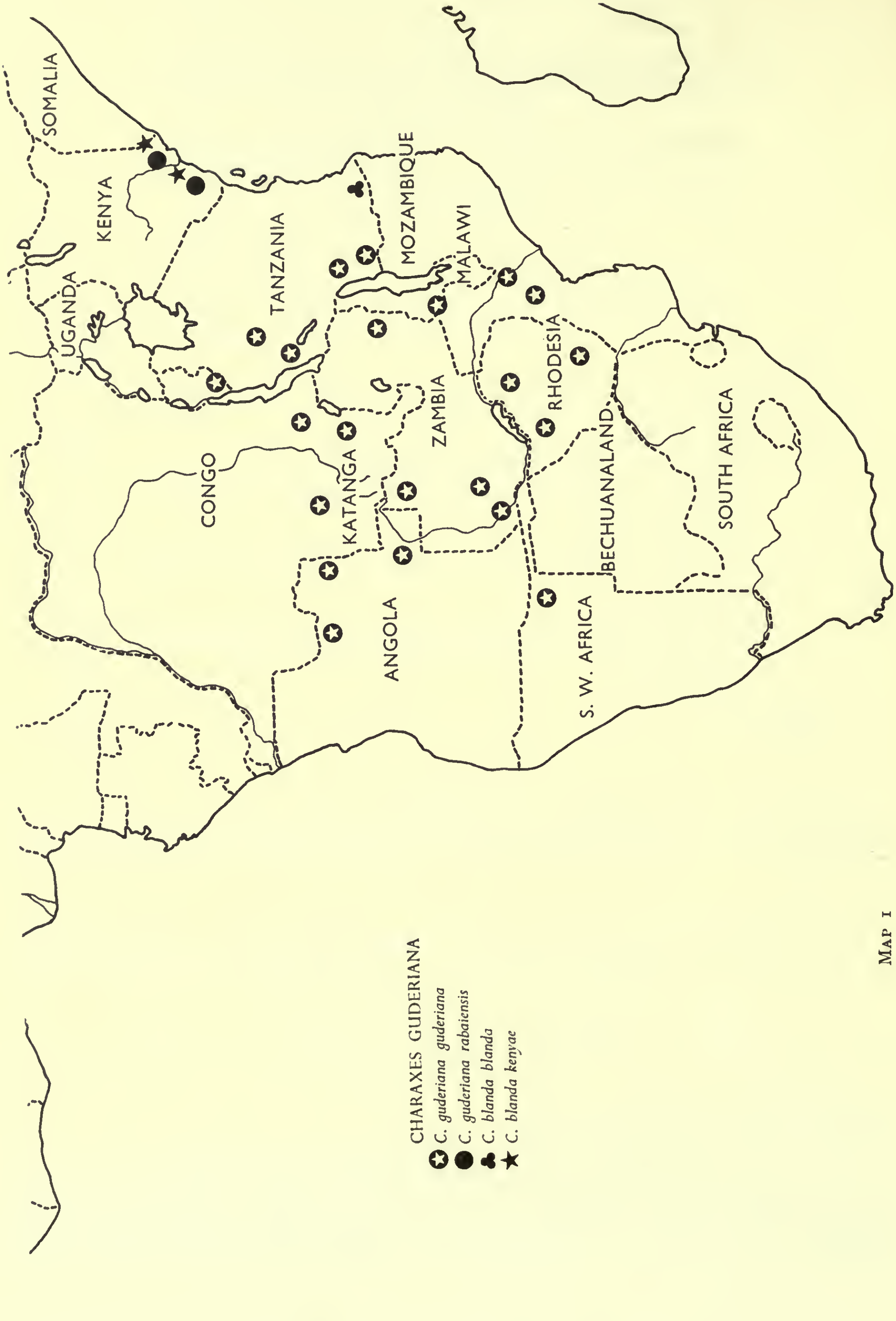
1. *CHARAXES GUDERIANA* Dewitz, *C. OPINATUS* Heron and *C. BLANDA* Rothschild and their subspecies

Charaxes guderiana (Dewitz)

(Pl. 1, figs 1–2, Map 1)

Nymphalis guderiana Dewitz, 1879 : 200.
Charaxes pelias var. *tanganika* Robbe, 1892 : 133 [♀].

Male. Fore wing length 31–33 mm. Shape falcate. *Upperside*. Ground colour blue-black, shading to strong greenish blue at base of wing. Fore wing with a bold pattern of white spots arranged as follows :—a large triangular spot, base toward costa, at end of cell ; two large elongate spots in discal line 5–6, occasionally a thin white streak at costa ; a series of bluish


SOMALIA
KENYA
UGANDA
TANZANIA
MOZAMBIQUE
MALAWI
RHODESIA
ZAMBIA
KATANGA
CONGO
ANGOLA
BECHUANALAND
S. W. AFRICA
SOUTH AFRICA
CHARAXES GUDERIANA
✪ C. guderiana guderiana
● C. guderiana rabaiensis
♣ C. blanda blanda
★ C. blanda kenyae

Map 1

white spots in postdiscal line, three in line in subapex 7–5, spot in 5 often small, spot in 3 large, followed by spots in 2–1a of decreasing size, the mark in 1b sometimes faint, that in 1a often missing, the spots from 4–1b set out toward the border ; margin with large spots of decreasing size from 1b to apex. Hind wing ground colour black, shading to greyish on inner fold ; a conspicuous greenish blue bar in the postdiscal line, extending from above the anal angle to 5, where the spot may be vestigial ; submargin with series of blue spots with white centres extending from anal angle to costa ; margin with strong white border, interrupted by black veins, shading to olive-green between tails and at anal angle ; anal angle with two black spots. Tails sharp-pointed, upper 4 mm, lower 6 mm. *Underside.* Fore wing ground colour light purplish grey-brown with a darker brown band crossing the disc ; base of wing with short black bars in the cell and sub-bases of 1b–2 ; a white spot at end of cell ; a series of black curved lines outlined distally with greyish, terminating in the two white spots in the discal line ; postdiscal whitish spots accentuated internally with black ; larger black spots at tornus and space above ; margin with light greyish marks, darker in interspaces at end of veins. Hind wing ground colour similar to fore wing, with slightly more vinaceous tint ; pattern rather suppressed, basal area with a fine black line ; discal area crossed by an irregular brownish band outlined finely in black and white, fading out toward inner fold ; postdiscal row of ochreous olive and maroon lunules complete, extending from costa to above anal angle ; submargin with whitish lunules well-spaced, with orange centres, strong to upper tail then shading to olive at the anal angle ; margin brownish black with white fringe.

FEMALE. Larger than the male, fore wing length 46–48 mm ; outer border usually slightly less falcate. Base of wing to end of cell and discal line 1a to 1b rufescent tawny, sometimes darker ; ground colour of distal portion of wing black with a large orange-ochre spot at end of cell, a smaller one sub-basal in 4, sometimes vestigial or absent ; in the discal line two large quadrate orange spots followed by larger spots of increasing size in 3 to hind margin at 1a ; postdiscal spots of same colour, elongate in subapex, increasing in size and more rounded, extending to 2 ; border of wing with large more rusty lunules, mostly separated by black at vein-ends but tending to be confluent toward apex. Hind wing basal area rufous tawny, sometimes dark, shading to more greyish on the inner fold ; discal orange bar, widest at costa, –68 mm, and tapering towards the inner fold where it is ill-defined, is clear-cut distally, and often with bluish scaling at tapered end, where it meets the broad black border which carries large bluish white lunules increasing in size from upper angle to anal angle ; border with strong marginal orange lunules to upper tail, then bluish olive to anal angle ; edge black ; tails long and rounded at ends, upper 7–8 mm, lower 5–6 mm. *Underside.* Fore wing ground colour drab greyish brown with vinaceous tinge ; strength of pattern variable ; three white-ringed dots in the cell ; a wavy black line crosses the subapex of the cell and goes through sub-base of 2, followed by a crescentic mark sub-basal in 1b. A buffish spot at end of cell ; buffish spot in discal row proximally accentuated by black lines ; postdiscal buffish spots, which are not strong at the apical end, become clear toward the hind angle and defined proximally by black lines and distally by large black marks in 2, double in 1b, shaded distally at tornus with whitish which extends up the submargin as ill-defined greyish lunules ; border rusty ochre. Hind wing ground colour as forewing, slightly paler at base and more greyish on inner fold ; sub-base with two fine black lines, the distal one bordering a darker brown zone which defines the inner edge of the discal band and which is again accentuated by a black line, the distal border of the band irregular, especially where it tapers to the inner fold, where it may be represented by a whitish mark ; the postdiscal zone is slightly darker in ground colour and is traversed by a series of rather ill-defined greyish olive and maroon lunules, strongest above the anal angle ; submargin with a series of greyish white lunules outlined distally in black, and represented as three black dots opposite the tails and a double spot in the anal angle ; border with greyish white lunules with orange centres as far as upper tail, then olive to anal angle ; margin darker grey to blackish, ill-defined.

Charaxes guderiana rabaiensis Poulton

(Pl. 1, figs 3–4, Map 1)

Charaxes guderiana rabaiensis Poulton, 1929 : 482.

The male differs from nominate *guderiana* in being generally darker, with smaller and fewer spots in the fore and hind wings, and in lacking the postdiscal blue bar in the hind wing. The female has a much darker ground colour than nominate female, but the bars on fore and hind wing are paler, creamy ochre instead of orange.

Male. Fore wing length 30–32 mm ; shape as in nominate race. *Upperside.* Ground colour deep black, with only a slight greenish sheen at base of wing. Spots arranged as in nominate race, the subcostal spots equally large, but the spots in the postdiscal row much smaller, not extending beyond 2, rarely a vestigial spot in 1b, all spots white ; marginal spots generally smaller. Hind wing usually without or with only the faintest trace of a postdiscal green-blue bar, submarginal spots much smaller ; marginal white lunules smaller, those at tails and anal angle with larger orange-bronze spots. Tails shorter. *Underside.* Ground colour very similar to nominate race, but basally paler, and the dark brownish band in fore wing in disco-postdiscal interspaces in more contrast. On the hind wing the postdiscal row of olive and maroon lunules stronger and more distinct.

Female. Fore wing length 35–40 mm. *Upperside.* Fore wing basal area blackish brown usually without any rufous tinge ; pattern of spots as in nominate race, but spot at end of cell often small or vestigial ; discal spots wider, more extended distad especially in 1a–2, but postdiscal spots smaller, all spots creamy ochre ; marginal spots smaller, less defined and paler. Hind wing basal area darker ; discal bar creamy ochre, usually wider ; submarginal spots almost obsolete ; rufous orange border strong to upper tail then olive at tails and anal angle. *Underside.* Much as in nominate race, but fore wing discal band stronger and wider ; tornal spots bolder. On the hind wing the creamy white band rather wider and more distinct ; postdiscal series of olive and maroon lunules more defined and distinct on a paler ground ; submarginal greyish lunules less strong.

This subspecies is common in the savanna and bush-veldt and most plentiful in the *Brachystegia* woodlands, Miombo country. The larvae feed on *Brachystegia* spp. (Leguminosae).

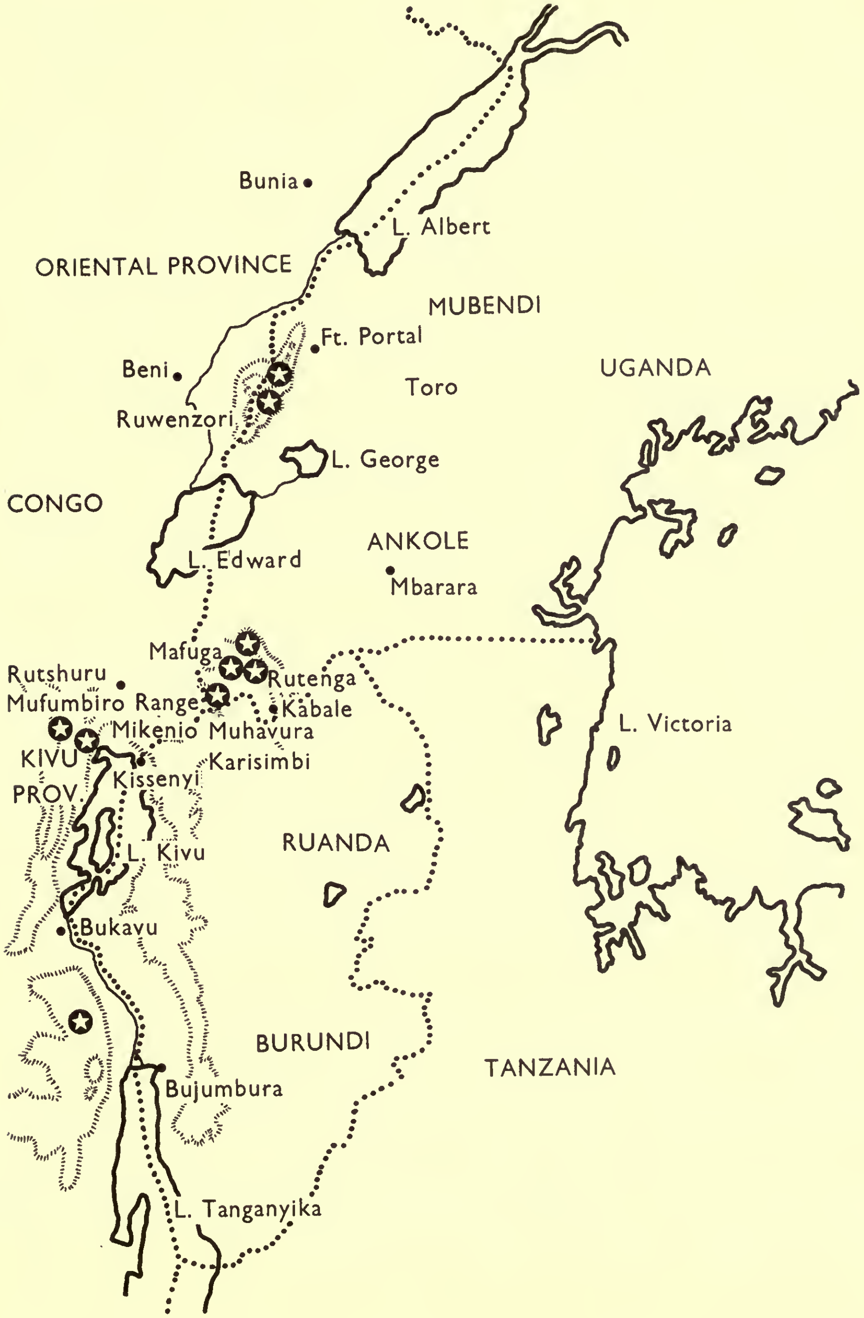
Charaxes opinatus Heron

(Pl. 1, figs 5–8, Map 2)

Charaxes opinatus Heron, 1909 : 156, pl. 5, fig. 7.
Charaxes opinatus Heron ; Jackson, 1956 : 65, pl. 3, fig. 5 ; pl. 4, fig. 5 ; pl. 6, fig. 4 ; pl. 7, fig. 4.

This is an alpine species which is confined to the montane forests of western Uganda, and the highlands of the Kivu region. The male is one of the commonest *Charaxes* in the high forests of the Kigezi country, coming readily to bait (fermenting bananas) and ' droppings ' of carnivores ; but in spite of intensive trapping over several years only two females have been taken, both at Mafuga. Heron compared the species with *Charaxes ethalion*, and drew attention to the similarity of the underside to that of *Charaxes anticlea*.

Male. Fore wing length 30–32 mm. Shape not falcate. The males exhibit three forms on the upperside. Form 1. *Upperside.* Ground colour rather a dull purplish black ; fore wing


Bunia
L. Albert
ORIENTAL PROVINCE
MUBENDI
Ft. Portal
Beni
UGANDA
Toro
Ruwenzori
L. George
CONGO
ANKOLE
L. Edward
Mbarara
Mafuga
Rutshuru
Rutenga
Mufumbiro Range
Kabale
Mikenio
Muhavura
KIVU
Karisimbi
Kissenyi
L. Victoria
PROV.
L. Kivu
RUANDA
Bukavu
BURUNDI
TANZANIA
Bujumbura
L. Tanganyika

MAP 2. *C. opinatus*

immaculate except for a very fine white fringe on margin. Hind wing ground colour as fore wing, slightly more brownish on inner fold, immaculate, except for a row of submarginal bluish linear marks with white centres, largest at hind angle to upper tail, then decreasing in size to upper angle ; margin with conspicuous brick-red border commencing just short of upper angle and extending to lower tail, then olive at anal angle ; extreme margin black with fine white fringe ; margin only slightly dentate. Tails moderately long and slender, upper 7 mm, lower 5 mm, black-edged, with red central line. Form 2. This is the nominate form. Similar to form 1, but with a row of dull brick-red spots in the postdiscal line on the hind wing extending from above the anal angle at 2, to the upper angle at 6, the lower marks to 4 conjoined, the rest free ; on the margin the brick-red border is more developed. Form 3. Very similar to form 2, but with a conspicuous series of brick-red linear marks in the postdiscal of the fore wing, extending from 1b to 5 following the contour of the outer margin ; the spot in 5, small and set in. Hind wing as in form 2. *Underside.* Ground colour satiny brownish grey, the fore wing crossed by two darker brownish bands, that in sub-base broad, passing through the upper end of the cell where it is 5 mm wide, then tapering very slightly through sub-bases 1b–2, the band is narrowly outlined in black and white. A discal brown band, widest at costa and through 6–5, becomes narrower and irregular through 4–1b. Outer marginal border in curve of the wing brownish, broad at centre but tapering at both apex and tornus. Basal area of cell with three white-ringed black dots. Hind wing ground colour as fore wing, disc of wing crossed by a strong brownish band, in line with that of the fore wing, edged black and white ; the postdiscal band narrow at costa, widens in the middle area and then tapers toward the inner fold above the anal angle, where the edges are more defined ; submargin with a series of linear black marks edged whitish internally and greenish distally, spots double at anal angle ; margin with dull reddish extending from upper angle to lower tail, where the border becomes olive at the anal angle ; extreme edge fringed with reddish.

FEMALE. Fore wing length 35 mm ; apex rather more pointed than male. *Upperside.* Ground colour black ; wing crossed by a white band, divided at costal end into discal and postdiscal spots which become conjoined at 3, forming more quadrate spots and extending to the hind margin in 1a. No spots on margin. Hind wing ground colour black ; disc of wing crossed by a white band, commencing at costa where it is 5 mm wide, is almost parallel-sided to 2, where it tapers toward the inner fold but does not cross it. Submargin with a series of well separated linear white marks, double at anal angle and slightly blue-ringed ; margin with slight rusty lunules from upper angle to upper tail. Tails long and slender, upper 7 mm, lower 5 mm. *Underside.* Fore wing somewhat as in the male, slightly less satiny brown, the ground colour slightly darker ; the discal white band of upperside well represented. Hind wing basal area slightly darker, sub-basal brownish band stronger ; discal white band in strong contrast, offset by a dark postdiscal zone, the white band not crossing the fold but there represented by a greyish mark. Submarginal series of white and black lunules complete ; marginal border as in the male.

Range : This species seems to be confined to the mountains of the western area of Uganda, the Kivu Mountains and is also recorded from the forests N.W. of Lake Tanganyika, no specific locality being given (*Grauer*). It was first taken on the eastern side of the Ruwenzori Mountains, Mubuku Valley, 5000 ft by the BM(NH) Expdt. 1905, and subsequently at the Namwamba Valley, 6500 ft, BM(NH) Expdt. 1934–35. Then there is an apparent break until one reaches the montane forests of the Kigezi area at Mafuga, Rutenga and Ruhiza, 6000–9000 ft. It is also recorded from the Niragongo forest, N.E. Kivu (*T. A. Barnes*).

Charaxes blanda blanda Rothschild

(Pl. 1, figs 9–10, Map 1)

Charaxes blanda Rothschild, 1897 : 507 ; Rothschild & Jordan, 1898 : pl. 6, fig. 3 (*blandus*).

The unique type of this species was taken by Reimer in the Mikindani area of Tanzania, which lies to the north of the mouth of the Ruvuma River on the Tanzania–Mozambique border. It has remained the sole example of the species from that area in spite of intensive search of recent years ; the female is still unknown. This is the more surprising since the subspecies *blanda kenyae* of the Kenya coast has been taken in some numbers.

MALE. Fore wing length 31 mm ; shape rather falcate, though the apex of wing is rather rounded ; margin bluntly dentate. *Upperside.* Fore wing ground colour black, with greenish sheen at base of wing. Pattern not strong, consisting of a small obscure spot at distal upper end of cell ; four blue spots in discal line (no spot in 4), subcostal mark elongate, one below small, spots in 3 and 2 larger and more rounded ; the postdiscal series of spots are bluish white, three subapical in a line followed by spots of increasing size more or less parallel to the margin of the wing, those in 1b and 1a more diffuse and bluish ; margin without marks except for slight white fringe between dentations. Hind wing, basal area black, shading to brownish on inner fold ; disc of wing crossed by a bluish white band, represented at subcosta by a small free spot, the rest conjoined and of increasing width to 2, then tapering toward the inner fold, where it is represented by a whitish triangular mark above the anal angle. Well separated submarginal linear marks pale blue, more purplish at anal angle ; marginal lunules present, commencing above upper tail, greenish blue to golden olive at anal angle. Margin dentate, tails long and thin, pointed, upper 5 mm, lower 6 mm, black with thin median line. *Underside.* Boldly patterned. Fore wing basal area greyish brown, with black spots and lines crossing the cell, one at base, a double spot beyond, followed by an angled line in subapex and a straighter line at apex continued through sub-base 3 with a line sub-base in 2. These lines define the inner edge of a darker brown bar, which in turn is accentuated by a wavy black line where it meets the discal bar ; the latter is silvery grey and rather ill-defined distally, where it borders on a broader dark greyish brown zone. It is fairly straight on its inner border but irregular on outer, where it is crossed by the postdiscal row of silvery grey spots, bordered with blackish in 2 and 1b but ill-defined at upper half, where it merges into the submarginal silvery grey band. The latter is forked at the costal end, fading out at the tornus, where there is a double blackish mark ; the curved outer border of wing dark greyish brown. Hind wing basal area greyish brown to discal silvery white bar, sub-base crossed by a silvery bar outlined in black stopping short of the inner fold ; the narrow discal bar crosses the wing from the costa to inner fold, where it stops short but is represented on the inner fold by a whitish line, the inner edge of the bar accentuated by black. The outer edge merges into a dark brownish zone which carries a series of black and olive lunules extending from costa to above the anal angle ; submargin with a continuous series of whitish lunules, distally edged in black, which forms loops between the tails and at anal angle, these all have lilac centres ; admargin maroon to upper tail then golden olive, edged white, then black. Margin dentate, tails black with olive mid-line.

Range : The only known locality for this race is Mikindani, north of the mouth of the Ruvuma River on the Tanzania–Mozambique border.

Charaxes blanda kenyae Poulton

(Pl. 1, figs 11–12, Map 1)

Charaxes blanda kenyae Poulton, 1926 : 552.

MALE. Fore wing length 31–34 mm ; more falcate than nominate race. *Upperside.* Fore wing, the spot in the cell well developed and blue ; the upper spots in the discal and postdiscal lines as far as 2 larger and white, the spot in 1b of the postdiscal line larger and often extended proximad to discal line, the mark in 1a a long streak, these latter marks strongly blue. Hind wing, the broad disco-postdiscal band brighter iridescent blue ending in whitish toward the inner fold, at the costal end the blue is continuous to the subcosta, and in addition, a discal subcostal spot is present ; the spots on the black border as in the nominate race. *Underside.* Fore wing much as in the nominate race but discal and postdiscal spots more distinct, the dark quadrate brown mark in subapex stronger, and the black surrounding the postdiscal spots in 1b and 2 stronger. Hind wing, the discal silvery bar is more angled on the outside in 5, and the inner fold to as far as the discal bar is distinctly buff ; the postdiscal row of black and olive lunules is more distinct on a paler ground ; the submarginal whitish lunules distinctly more bluish distally ; the admargin more reddish to upper tail, then golden olive to anal angle, which has the two bluish white spots ; margin as in the nominate race.

FEMALE. Larger than the male, fore wing length 36–37 mm ; shape slightly less falcate. *Upperside.* Fore wing ground colour less intense black and with less greenish at base of wing. Pattern as in the male but all spots larger, the spots in 1a–1b conjoined, all spots bluish white ; some dark scaling indicating the line of junction of the two rows in 2 and 1b, the mark in 1a a long streak. Hind wing discal patch bluish white, more strongly blue on distal border, represented at subcosta by a free white spot in the discal line and conjoined spots in the postdiscal line ; submarginal spots bluish white ; admarginal angled marks somewhat orange above upper tail, then olive to tails but bronzy at anal angle. Tails long with rounded ends, upper 8 mm, lower 7 mm. *Underside.* Pattern essentially similar to that of male, but fore wing ground colour paler and more satiny, the silvery sub-basal area and that of the discal row of spots more distinct ; tornal double black mark strong. On the hind wing the silvery discal bar strong ; the zigzag postdiscal line of lunules stronger and the border of the wing more satiny ; the admarginal reddish lunules above upper tail strong, golden olive at anal angle with greyish blue spots outlined in black, strong.

The female oviposits on *Dalbergia* (Papilionaceae) and also on *Brachystegia* spp. (Caesalpinaceae).

Range : Occurs in the forests north of Mombasa ; the types are from the Sekoke forest, 1921 (*van Someren*), but it is now known to occur not only in the Sekoke-Arabuko forest but also in the forest patch around Gedi and Kilifi.

2. *CHARAXES ACHAEMENES* FELDER AND ITS SUBSPECIES

A species with a very wide distribution, extending from the Natal area of South Africa to northern Ethiopia and Sudan, then westward to the West Coast. It is found in the savannah country and light woodland, wherever its food plants, *Pterocarpus* spp., are abundant.

Various ' forms ' have been described, but no attempt has been made to divide the species into geographical races or subspecies, though there is an obvious difference between the females of the southern group and those of the northern and western areas ; the males however exhibit no great difference in pattern or colour.

In 1904, Suffert described the form (subsp.) *fasciatus*, based on males and females from the Mhonda area of the Morogoro district of Tanzania. In 1925, Joicey & Talbot described a female from the southern Sudan as f. *monticola*. Poulton (1926) refers to these two ' forms ' as ' Abs '. Up to this time, the species was represented in most collections mainly by male specimens, this sex being much in evidence throughout its range. Since the introduction of the ' hanging trap ' method of capture, large numbers of females have been taken, and these indicate clearly that the species can be divided up into two main groups, *achaemenes* of the southern areas and those of the northern zone, north of the Equator.

The first reference in literature to a recognition of a northern subspecies is that of Carpenter & Jackson, 1950, when they refer to examples of the species from the Suk area of Kenya, trinominally, as *achaemenes monticola* Joicey & Talbot. This is a reference in the text, but there is no formal elevation of the name *monticola* to subspecific rank.

Having examined a large quantity of material from throughout the range of the species, the following division is submitted. It is supported by ecological factors.

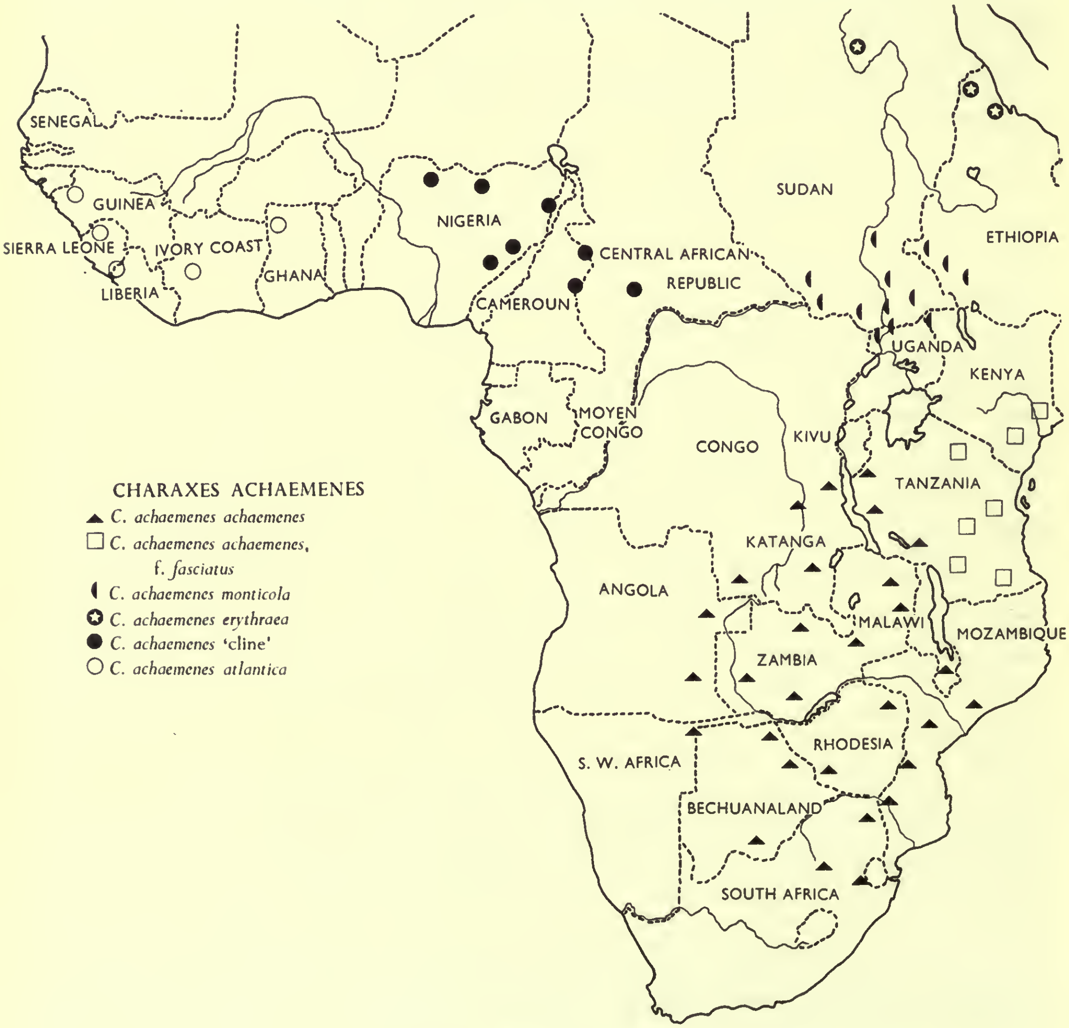
Charaxes achaemenes achaemenes Felder

(Pl. 1, figs 13–14, Map 3)

Charaxes achaemenes Felder, 1866 : 446, n. 739, pl. 59, figs 6–7.

MALE. Fore wing length 36–38 mm. Shape rather falcate, but degree of inward curvature of the outer margin at 4–6 variable ; strongly falcate forms commoner in dry areas of distribution. *Upperside*. Fore wing ground colour of basal area to just beyond mid cell and proximal border of discal bar, 1a–1b, brownish olive, shading into the brownish black ground colour of the rest of the wing ; a small creamy spot occasionally present at end of cell, a sub-basal spot in 4. Discal bar pale creamy white : two upper spots, rounded or irregular in shape at about mid-point areas 6–5, no spot in 4, sub-basal spots in 3–2 larger and more rounded on inner side, slightly indented distally, large quadrate mark in 1b, a linear mark in 1a, the bar is widest in 1b : 5–6 mm. Postdiscal series of spots : three in line in sub-apex, the lower small, spot in 4 set in, followed by angular marks in 3–2, in contact with, or slightly separate from discal marks in same areas. Margin with small linear marks in centres from 7 to hind angle, double mark in 1b. Hind wing, brownish olive at base, more greyish on inner fold. Discal creamy white bar clearly defined in upper part at costa and on outer edge to cell it fades out into the greyish inner fold, width 4–6 mm at cell. Distal half of wing black or brownish black, submargin with series of slightly angular or crescentic white marks from upper angle to anal angle, those opposite tails slightly blue-edged distally ; margin with narrow bluish line in tail region, the blue extending into the mid-line of tails which are thin, upper 5–6 mm, lower 7–8 mm long. *Underside*. Fore wing, ground colour brownish grey, slightly paler in the cell, which is crossed by thick chestnut lines, one at base, a short bar at mid point, followed by a curved line and a transverse one at end of cell. The pale whitish discal bar is accentuated proximally with thick chestnut lines in 3 and 2, the latter with an additional sub-basal line, the chestnut line in 1b in the form of a U, the outer arm continuous with the sub-basal line in area above. The division between the discal and postdiscal whitish spots indicated by a dark area in 6–7, then by brownish black marks in 5–2 ; the postdiscal pale spots accentuated distad by black dots becoming larger in 2, and conspicuous in 1b, where the mark is double and bold. The submargin is ornamented by a brownish line interrupted distally by marginal whitish marks which extend from apex to hind angle. Hind wing, ground colour brownish grey, the basal area crossed by heavy chestnut lines at the base, and by finer interrupted ones toward the inner fold and over lower end of discal zone, the two lower ones crossing at right angles to the fold above the anal angle. Postdiscal zone with a series of brownish grey lunules strongly accentuated proximally in black in the upper half but less strongly in 4 to above the anal angle. Submargin with whitish lunules distally accentuated in black, with strong black at base of upper tail, and two black dots in the olive anal angle. Margin with some rufous orange coloration above the upper tail ; margin narrowly black with some white scales.

FEMALE. Fore wing length 40–42 mm. Shape similar to that of male or less falcate. *Upperside.* Fore wing, base rufous or rufous chestnut to as far as the discal line in 1a–2 and to the end of the cell ; remainder of the wing brownish black ; an ochre spot indicated at end of cell, a more distinct spot sub-basal in 4 ; disco-postdiscal bar as in the male, but spots larger and ochre-orange in colour, the upper spots in 4–5 conjoined by rufous scaling ; margin with large orange-ochre, rather quadrate marks from apex to hind angle, the marks twice the size of the intervening black. Width of discal bar in 1b–2, 5–6 mm wide, the conjoined bar


SENEGAL
GUINEA
SIERRA LEONE
IVORY COAST
LIBERIA
GHANA
NIGERIA
CAMEROUN
CENTRAL AFRICAN
REPUBLIC
SUDAN
ETHIOPIA
UGANDA
KENYA
GABON
MOYEN
CONGO
CONGO
KIVU
TANZANIA
KATANGA
ANGOLA
MALAWI
MOZAMBIQUE
ZAMBIA
RHODESIA
S. W. AFRICA
BECHUANALAND
SOUTH AFRICA
CHARAXES ACHAEMENES
▲ C. achaemenes achaemenes
☐ C. achaemenes achaemenes, f. fasciatus
◖ C. achaemenes monticola
✪ C. achaemenes erythraea
● C. achaemenes 'cline'
○ C. achaemenes atlantica

MAP 3

almost parallel-sided up to 3. Hind wing basal area rufous, merging into proximal edge of discal bar in cell area and into the more greyish of the inner fold ; the upper end of the bar slightly paler than fore wing bar ; distal portion of wing black with a well marked series of white lunules edged with bluish opposite the tails in submarginal zone ; marginal border slightly orange toward upper angle, more strongly blue opposite tails, then olive at anal angle. Tails thin and long, upper 8–9 mm, lower 10 mm. *Underside.* Much as in the male, pattern slightly bolder ; the disco-postdiscal and discal bars in hind wing creamy white.

Variation. The males are remarkably constant ; a few may show a slight increase in size of the submarginal spots in the hind wing. Females also hardly vary ; there may be an increase in the degree of blue around the submarginal spots in the hind wing, this colour sometimes tending to encircle the spots of the lower end opposite the tails ; these slight variations seem to occur more often in the low coastal areas of Mozambique. Occasional aberrations exhibiting partial melanism have been recorded. Overlaet figures a gynandromorph from Upemba Park, Katanga.

Range : The type is said to have come from Port Natal (Durban), but probably came from further inland. The species occurs commonly in Transvaal, S. Mozambique, Rhodesia, Zambia, eastern Angola and Katanga ; western and central Tanzania ; also in the savannah country of Kenya around Taveta, Voi and Kibwezi. In south-eastern and eastern Tanzania the ' form ' *fasciatus* Suffert occurs, and is dealt with separately hereafter.

Charaxes achaemenes form or var. ***fasciatus*** Suffert

(Pl. 2, figs 15–16, Map 3)

Charaxes achaemenes form/subspecies *fasciatus* Suffert, 1904 : 123.
Charaxes achaemenes f. ab. *fasciatus* Suffert ; Poulton, 1926 : 573.

Special mention is made of this variation since it appears to be dominant in eastern parts of Tanzania, and is probably a climatic variant.

MALE. *Upperside.* Fore wing, ground colour rather darker than nominate race, the white bar sometimes very narrow in 1a–1b, but variable. The marginal white spots often larger. On the hind wing the submarginal white spots are large and often blue-ringed, especially the lower ones opposite the tails ; the marginal border usually more strongly marked, sometimes extending beyond the upper tail. *Underside.* Ground colour darker.

FEMALE. Fore wing length 42–43 mm. *Upperside.* Fore wing, ground colour darker, especially at base. The disco-postdiscal bar tending to be wider in 1a–3 ; the hind wing bar paler than that of fore wing, strongly encroached upon by the basal rufous colour. Submarginal white spots larger with strong blue surround, the blue scaling more often extending inward over the distal portion of the black band ; marginal border orange in upper portion, bluish white in region of tails, olive at anal angle. *Underside.* Ground colour often paler.

Range : Tanzania. From Lindi to Songea and north to the Morogoro area at Mhondo and (?) Turiani.

Charaxes achaemenes monticola Joicey & Talbot

(Pl. 2, figs 17–12, Map 3)

Charaxes achaemenes f. *monticola* Joicey & Talbot, 1925 : 645.
Charaxes achaemenes ab. ♀ *monticola* Joicey & Talbot ; Poulton, 1926 : 573.

Charaxes achaemenes monticola Joicey & Talbot ; Carpenter & Jackson, 1950. [Referred to trinominally in text, but no formal elevation of status.]
Charaxes achaemenes Felder ; Carpenter, 1935 : 359 . [Referred to binominally.]
Charaxes achaemenes Felder ; Wilson, 1950 : 231.

C. achaemenes of the northern regions, north of the Equator, from north of Lake Victoria to Ethiopia and Sudan represents an ecological aggregate sufficiently distinct from nominate southern *achaemenes*, deserving of recognition, as a good subspecies. Representatives of this aggregate in the more western areas of the Central African Republic, N. Cameroons and N.E. Nigeria differ slightly and are referred to separately.

Males of *monticola* are very stable, but females are rather variable within the restrictions which separate them from nominate *achaemenes*.

MALE. Fore wing length 35–36 mm ; shape usually rather falcate. *Upperside.* Fore wing pattern as in the nominate race, the junction of the olive base with the black beyond, more strongly greenish ; the disco-postdiscal bar rather narrow as a rule, seldom exceeding 5 mm in 1b. The marginal spots very small. On the hind wing the submarginal spots are usually small with little or no blue distally. Upper tails short, 4–5 mm, lower 8 mm. *Underside.* Pattern as in nominate race, but distal portions of both wings more brownish ; the postdiscal lunules stronger.

FEMALE. Fore wing length 41–45 mm ; shape less falcate than in the male. *Upperside.* Fore wing pattern generally similar to that of the nominate race but spots rather more restricted, the marginal spots smaller.

Three forms occur : Form 1. The ground colour is very similar to that of the male ; the fore wing disco-postdiscal bar creamy white except for the spots in the postdiscal line, which are slightly tinged ochreous ; the marginal spots small and ochreous. Hind wing black band broad, the submarginal spots moderately large. This form is thus somewhat ' male-like ', and is exceptional. Wing length 41 mm.

Form 2. Ground colour of fore wing as in form 1, but disco-postdiscal spots orange-ochre except for lower ones in 1b & 1a, which are creamy white. Marginal spots small, ochre-orange. This is the dominant form and agrees with the type. (Pl. 2, fig. 19.)

Form 3. The base of the fore wing rufous chestnut ; the spot at end of cell more distinct ; the disco-postdiscal bar more orange-ochre to hind margin ; the marginal spots larger. The bar on the hind wing ochreous ; the submarginal spots larger. Undersides in all three forms much as in the male, but pattern bolder. (Pl. 2, fig. 18.)

Range : Kenya : West of Rift Valley, at Baringo, Suk and Turkana. Uganda : Karamoja ; Nile Province, Madi, Metu. Lake Albert area at Masindi and Budongo area outside forest. Sudan : southern and mid Sudan. Ethopia : in the south-western regions.

***Charaxes achaemenes* f. *erythraea* Storace**

(Pl. 2, fig. 22, Map 3)

Charaxes achaemenes f. *erythraea* Storace, 1948 : 132–41.
Charaxes achaemenes Felder ; Wilson, 1950 : 231.

This ' form ' of uncertain status was described from a single male taken at Asmara, Eritrea on the Red Sea coast. It was described as being ' a little smaller than the nominate form. Dorsal pubescence of the thorax the same colour as the adjoining parts of the wings ; otherwise colour and pattern of body as in typical form'. There is nothing in the detailed description which follows to distinguish it from males from further south in S. Sudan. i.e. *monticola*. Storace compared it with males from S. Congo (Katanga).

Butler records *achaemenes* from Atbara and Kandera on the Nile in northern Sudan, and Wilson (1950) notes the species as common in ' Central Sudan ' around Khartoum.

The female has not been recorded so far as I know. The status of this taxon requires re-investigation.

Charaxes achaemenes cline *monticola* × *atlantica*

(Map 3)

Specimens from the northern Cameroons were originally associated with *monticola* but examination of material from the Central African Republic west to northern Cameroons and eastern Nigeria suggests that this aggregate really represents a cline between typical *monticola* and the more western race of Senegal, Gambia etc.

MALE. Fore wing length 40 mm. *Upperside.* Coloration and pattern similar to *monticola*. *Underside.* Ground colour paler throughout, but pattern similar.

FEMALE. Variable. Form 1. Very similar to Form 2 of *monticola*. *Upperside.* The disco-postdiscal bar similar in colour but rather broader throughout, orange-ochre to 2, then creamy to hind margin. *Underside.* Very similar to *monticola* but paler.

Form 2. *Upperside.* Somewhat similar to Form 3 of *monticola* but fore wing disco-postdiscal bar broader and rich rufous orange ; the marginal spots larger. On the hind wing the basal area more rufous, the black band less wide, the submarginal spots bolder, those in the lower half with strong blue distally. Marginal border orange at upper half, then white with strong blue scaling to anal angle. *Underside.* As in Form 1.

Mr R. G. T. St Leger suggests that the forms are ' climatic ', Form 1 being found in the Enugu area and the rufous orange form further north-west near the border between east and north Nigeria, but in the Cameroons they occur together.

Range : Central African Republic, northern Cameroons and eastern Nigeria.

Charaxes achaemenes atlantica ssp. n.

(Pl. 2, figs 20–21, Map 3)

Charaxes jocaste Butler, 1965 : 274 footnote. [Application submitted for the proposed suppression of this name under the plenary powers of the International Commission on Zoological Nomenclature. See van Someren, 1967 : 255.]

MALE. Fore wing length 35–37 mm. *Upperside.* Pattern rather similar to those of the Cameroon area but disco-postdiscal bar broader, the upper spots larger. The submarginal spots in the hind wing tending to be small ; the marginal border more greenish blue. *Underside.* Discal areas of both wings paler, more whitish.

FEMALE. Fore wing length 43 mm. Form 1. *Upperside.* Ground colour at base brownish olive to mid cell and inner border of discal bar. Spots at end of cell distinct ; disco-postdiscal bar broader than in *monticola* or Cameroon cline, all spots creamy ochre, spots in 6–4 conjoined by rays ; marginal spots large, creamy ochre. Hind wing bar broader, creamy white, extending beyond the cell area toward inner fold where it is bluish white, brownish grey beyond. Black band broad ; submarginal spots large, white with blue surround. Tails long, more robust, 10–11 mm. *Underside.* Ground colour paler but row of dark spots in hind wing well marked.

Form 2. *Upperside.* Differs by being slightly smaller, with more rufous at base of fore wing ; the bars in fore and hind wing broad as in Form 1, the spots in fore wing orange-ochre to 2, then whitish to hind margin. Hind wing bar creamy. This corresponds to Form 1 of the intermediate ' cline '.

Holotype male. SENEGAL : ' jocaste Bdv.', ' Charaxes jocaste, 5. ♂ Sene '.

Allotype female. SENEGAL : ' jocaste Bdv.', ' Charaxes jocaste, 3. ♀ Sene '.

Range : West Africa: Senegal, Gambia, Guinea and Ivory Coast.

SYSTEMATIC LIST

Charaxes achaemenes Felder

Charaxes achaemenes achaemenes Felder, 1866. Type locality : ' Natal '.
Range : South Africa ; N. Natal, Delagoa Bay ; Mozambique ; Transvaal ; Botswana ; eastern S. W. Africa. Central Africa ; Rhodesia, Zambia, Manicaland, Malawi, Katanga, eastern Angola. Eastern Africa; southern Tanzania to east side of Lake Tanganyika, central Tanzania to south of Lake Victoria. Kenya ; coast and savannah country of hinterland to Ukambani, Voi, Kibwezi. (Small form).

Charaxes achaemenes f. *fasciatus* Suffert, 1904. S.E. Tanzania ; at Mondo, Morogoro Distr.

Charaxes achaemenes monticola Joicey & Talbot, 1925. Type locality, S. Sudan.
Range : Kenya ; west of the Rift Valley, Baringo, Suk, Turkana. Uganda ; Karamoja, Nile Province, Lake Albert area, Masindi, Budongo. Ethiopia ; S.W. area. Sudan ; southern Sudan.

Charaxes achaemenes f. *erythraea* Storace, 1948. Type locality: Asmara, Red Sea. Doubtfully distinct from *monticola.*

Charaxes achaemenes cline *monticola.*
Range : Northern Central African Republic ; N. Cameroons ; Eastern Nigeria.

Charaxes achaemenes atlantica ssp. n., n. n. for '*jocaste*' Butler, 1896. *Nomen oblitum.* Type locality : Senegal.
Range : West Africa ; Senegal, Guinea, northern Ivory Coast, N. Ghana.

3. *CHARAXES PHOEBUS* BUTLER, *C. BRUTUS* CRAMER AND ITS SUBSPECIES AND *C. ANDARA* WARD.

Charaxes phoebus Butler

(Pl. 3, figs 23–24)

Charaxes phoebus Butler, 1865 : 625.

The upperside of the male bears a superficial resemblance to *Charaxes druceanus*, but the underside is totally different.

MALE. Fore wing length 41–44 mm. *Upperside.* Fore wing, ground colour of basal area rufous tawny ; discal band more orange ; distal border of wing black ; there is a short black narrow bar in subcostal area before the end of the cell, followed by larger black bars, basal in 4, 5, 6 ; then an irregular black bar beyond on inner border of discal orange band in 6–5 followed by a larger mark in 4 and larger rounded marks in 3–2 with a smaller spot in 1b ; a triangular black subcostal mark, apex down, separates the ' fork ' of the rufous orange band at its costal end and is represented in 5–2 by smaller spots indicating the line of fusion between the discal and postdiscal series ; width of band at hind margin 10 mm. Margin of wing with strong orange spots, double in 1b. Hind wing, basal area slightly duller rufous, shading to dull rusty on the inner fold ; discal band, more orange, 10 mm wide at costa, is uniform in width to cell area, then tapers toward the inner fold above the anal angle. It is ill-defined on inner edge, clearly defined on outer margin where it is bordered by a black band, tapering at both ends but is rounded at the anal lobe which carries one elongate or two mauve spots. Margin with strong tawny orange lunules separated only by black veins ; edge black with slight white fringe within the bluntly dentate margin ; tails short, robust, sharply pointed, at 2 & 4, 4–5 mm long. *Underside.* Fore wing, basal area rufescent chestnut, more olive-russet on outer border. Discal band rusty ochre, paler at hind end, the ' forked ' upper portions accentuated by black lines with buff surround ; the subcostal bars narrowly black with silvery white outlines, the bars in sub-bases of 1b–3 more strongly black, outlined whitish. The postdiscal series of black spots, narrowly edged bluish grey distally, complete, the spots increasing in size from apex to the double mark at the tornus ; edge of wing slightly orange with a series of black marks at ends of veins, interrupted by whitish ochre in between. Hind wing, ground colour in basal triangle rufescent chestnut to discal line where the band is hardly indicated, but is crossed by transverse buff lines along the veins, offset proximally by a series of short black lines strongly edged with white distally and extending to the inner fold above the anal angle ; the basal area crossed by three white-edged fine black lines ; the three lines on the inner fold above the anal angle more or less parallel. The border of the wing more orange-olive ; edge black with white fringe.

FEMALE. Larger than the male, fore wing length 46–48 mm, with a straighter outer border than the male. *Upperside.* Fore wing, basal area as in the male, the black marks similarly placed, but discal band paler creamy yellow from hind margin to 2–3 proximally, shading to orange-rufous distally, the ' fork ' of the band rufous orange with paler centres ; border black with large rufous orange marks on margin. Hind wing, extreme basal triangle rufous tawny, shading to greyish ochre on inner fold ; discal band yellowish creamy, not sharply defined on inner border and distally shading to tawny orange at the broad black border, which carries a black ocellus with lilac spots at the anal angle. Margin with conspicuous orange lunules ; edge black, slightly dentate ; tails on 2 & 4 black, upper 6 mm, lower 4–5 mm. *Underside.* Ground colour as in the male but duller, though bars and spots are strong ; discal band buff-white and clear-cut and extending through the inner fold ; the postdiscal and submarginal alternate black and whitish marks on a duller more olive ground are well represented, the white marks of the two rows connected by white streaks. Margin as in the male.

The female thus bears a resemblance to that of *Ch. druceanus teita* on the upper side.

This species was reared in some numbers by the late Malcolm Berkeley, from eggs and larvae found on *Bersama abyssinicus* (Melianthaceae) in the Adola district of southern Ethiopia.

Range : This species is somewhat restricted, being confined to the north-west, west and southern districts of Ethiopia. It is recorded from Shoa : Mahal-Uong, Axelena, Feleklek and Scioatalit, where it was originally discovered by Antinori in

1865 ; it also occurs at Youbdo in south-west Ethiopia where it was common (*Ungemach*) and was plentiful at Adola in southern Ethiopia.

Charaxes brutus Cramer

The species *Charaxes brutus* ranges through a large part of Africa, from Ethiopia to the Atlantic coast of Senegal and Sierra Leone, then south to Angola. On the eastern side, it extends to the Natal area of South Africa. It has evolved into several distinct subspecies, but where two of these converge and tend to overlap, there is evidence of intergradation ; thus *brutus brutus* intergrades with *brutus angustus* in the mid Nigerian area, and *angustus* intergrades to an even greater extent with *alcyone* in the eastern Rift Valley ; and *alcyone* with *natalensis* in Tanzania. There is evidence to suggest that *junius* meets *somalicus* in the south-west of Ethiopia. It is a forest, woodland and heavy savanna species, and since suitable habitats exist in almost continuous sequence throughout its range, clear-cut ecological barriers hardly exist. The species has extended to some of the islands in the Gulf of Guinea, and also to the islands off the east coast.

The insular race *antiquus* Joicey & Talbot of São Thomé clearly exhibits relationship to mainland *brutus*, but that of Fernando Po has not diverged from the mainland race. On the other hand, the insect found in Madagascar, *andara* Ward, has a very distinctive female which has resulted from complete separation over millions of years. It should, in my opinion, be considered a distinct species. The fact that the genitalia of *andara* is very similar to that of *brutus* is of little significance, for many well-defined species of *Charaxes* have almost identical genitalia.

Rothschild (1900) recognized five subspecies and since that date one more insular race has been added ; several forms have been described. I propose to deal with each in geographical sequence.

Charaxes brutus brutus Cramer

(Pl. 3, figs 25–26, Map 4)

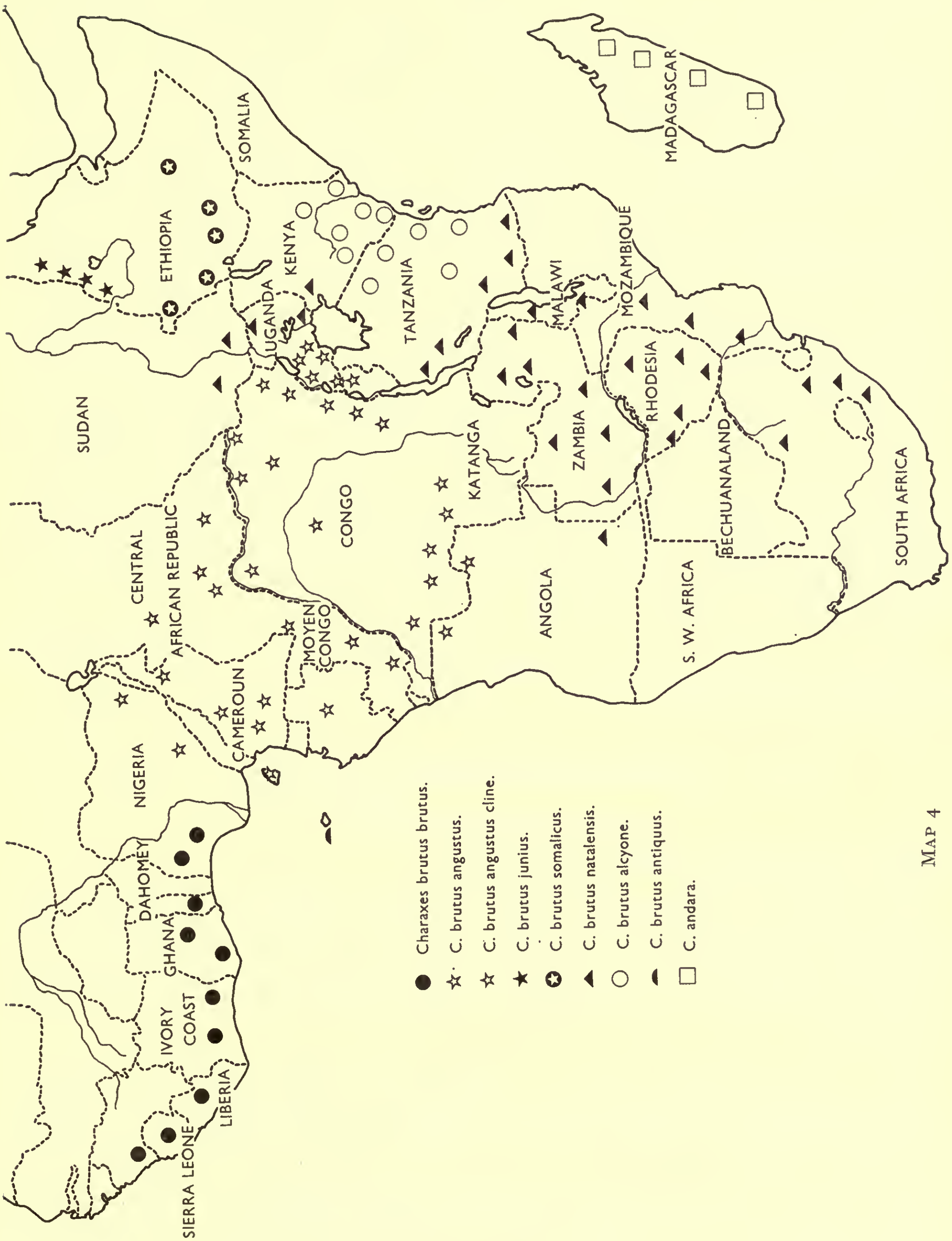
Papilio eques Achivus brutus Cramer, 1779 : 82, pl. 241. Locality : Cape d. g. Hoffn. [Patria falsa.].

Papilio Eques Achivus cajus Jablonsky & Herbst, 1790 : 65. Locality : Cap. d. g. Hoffn. [Patria falsa.].

For full synonomy *vide* Rothschild, 1900 : 423. Corrected type-locality : Guinea-Sierra Leone.

This is a black species with white bands crossing both wings, the hind portion of the fore wing band coinciding with the costal portion of the hind wing band.

MALE. Fore wing length 42–44 mm. *Upperside.* Fore wing, ground colour black, with slight greeny sheen toward base. Disc of wing crossed by a white or slightly yellowish creamy band, widest at the hind margin at 1a–1b, 8–9 mm wide and contiguous ; spots from 2–7 of decreasing size and well separated so that the band appears broken and tapers toward the costa. Margin with small internervular white dots or lines, distinct or vestigial. Hind wing, ground colour as fore, slightly more greyish toward inner fold, which shades to rufous along the inner


SUDAN
ETHIOPIA
SOMALIA
KENYA
UGANDA
TANZANIA
MALAWI
MOZAMBIQUE
MADAGASCAR
RHODESIA
ZAMBIA
KATANGA
CONGO
CENTRAL AFRICAN REPUBLIC
MOYEN CONGO
CAMEROUN
NIGERIA
DAHOMEY
GHANA
IVORY COAST
LIBERIA
SIERRA LEONE
ANGOLA
S. W. AFRICA
BECHUANALAND
SOUTH AFRICA
● Charaxes brutus brutus.
☆· C. brutus angustus.
☆ C. brutus angustus cline.
★ C. brutus junius.
✪ C. brutus somalicus.
◀ C. brutus natalensis.
○ C. brutus alcyone.
◖ C. brutus antiquus.
□ C. andara.

MAP 4

edge and above the anal angle. Disc of wing crossed by a white band, widest at costa, the band almost parallel-sided, then tapering at inner fold to above the anal angle. Average width of band 8–10 mm, usually bordered by bluish scaling. Tornus or anal lobe with two bluish dots and sometimes one in space above. Margin of wing serrate, with sharply pointed tails at veins 2 and 4, of about equal length, 5 mm. *Underside.* Fore wing, ground colour at bases of wing chestnut, shading to greyish at bases of 1a–1b in fore wing. Basal half of costal vein white. Subcostal area, including the cell, crossed by irregular shaped black bars boldly outlined in silvery white ; two similar marks in 1b and 2 and one sub-basal in 3 ; the outer spots accentuating the graduated white bar on its inner border. Ground colour on distal portion of wing olive-brown, with a continuous series of somewhat triangular black marks narrowly outlined distally in white in the postdiscal line ; the black marks at tornus with more conspicuous bluish white margins ; margin with black marks at end of veins, with white fringe in between. Hind wing ornamented with angular black marks, long ovoid in subcostal area, more elongate to linear toward inner fold, all marks boldly outlined in silvery white ; a series of black marks boldly accentuating the proximal edge of the white discal bar. Ground colour of distal portion of wing olive-brown, crossed by an intricate pattern of two rows of black marks connected by silvery blue criss-cross lines on a chestnut ground ; spot at anal angle more solidly black, with two bluish white central dots ; margin with strong black lunules narrowly bluish internally.

FEMALE. Very similar to the male but generally larger ; fore wing length 45–47 mm. *Upperside.* Fore wing, ground colour black as in the male but slightly more brownish toward the base of the wing. Hind wing, as in the male. Discal bars white or slightly creamy yellowish, in general form conforming to that of the male, but bolder, the hind wing bar extending into the inner fold above the anal angle. In this sex also, the fore and hind wing bars are of about equal width at the point of overlap, so that the bands appear continuous and unbroken. (Cf. *angustus*, in this respect.) Border of wing black to edge ; margin serrate ; tails longer than in the male, the upper one usually the longer.

Range : The nominate race is distributed from Guinea-Sierra Leone, Liberia and Ivory Coast to western Nigeria. There appears to be some intergrading with the next race in N.E. Nigeria.

Charaxes brutus angustus Rothschild

(Pl. 3, figs 27–30, Map 4)

Charaxes brutus angustus Rothschild, 1900 : 432.

Rothschild compared this race with the southern *natalensis* Staudinger which is confusing, and not with nominate *brutus*, which it more closely resembles. The conspicuous difference on the upper side is the narrowness of the fore and hind wing discal bars which do not coincide at the point of overlap, that of the upper wing being offset.

MALE. Fore wing length 43–46 mm. *Upperside.* Fore wing, ground colour black, with slight greenish sheen over basal area. Discal bar white or slightly tinged yellowish cream, extending from the hind margin to subcosta, arranged as in the nominate race, but differing markedly in the width of the marks in 1a–1b–2 which are reduced to 3–4 mm wide on the proximal side, so that at the point of overlap with the band of the hind wing is offset distally to the band of the fore wing. Margin with very slight trace of whitish spots, or immaculate ; margin slightly incurved above 3. Hind wing band white, widest at costa, 5–6 mm, tapering toward the inner fold above the anal angle, but not crossing it ; the band almost straight on inner border but slightly curved on outer. Basal area greenish black shading to brownish on inner fold. Anal lobe with two blue dots, a blue spot in area above, and a trace of one beyond, opposite upper tail ; margin with narrow white interspaces present or absent. Margin serrate ; tails 4 mm long, of equal length, or lower one slightly shorter. *Underside.* Colour and pattern as in nominate race but slightly paler, the white bars narrower.

FEMALE. Fore wing length 46–52 mm, thus larger than the male ; the outer margin only slightly incurved. *Upperside.* Fore wing, ground colour as in the male, but basal areas more greenish brown ; bands of wings similar in shape but bolder, bar of hind wing extending through the inner fold above anal angle. Two blue spots in anal lobe larger ; margin serrate and tails well formed as in the male. *Underside.* As in the male, but ground colour slightly paler and the submarginal black marks and those in the postdiscal row showing up more clearly.

Specimens from the island of Fernando Po are similar in pattern and colour to those of the mainland ; they may be slightly larger, but not always so.

Variations : Two aberrations have been described and named, viz.—*fractifascia* Le Cerf, 1923 : 365. Gabon ; *nigrescens* Le Moult, 1933 : 17, T. 4, fig. 9. Etoumbe, Moyen Congo.

Two aberrations taken by Mr T. H. E. Jackson's African collector in the Moyen Congo are figured (Pl. 3, figs 29–30).

Fig. 29 depicts a male with the fore wing bar almost completely obliterated by black scaling, and barely indicated. The hind wing however is normal. On the underside the usual chestnut ground colour of the basal area is replaced by creamy white ; the margin border is greyish, so that the postdiscal series of black triangular spots are conspicuous. The hind wing is however more or less normal though the chestnut ground colour is paler. Locality : French Equatorial Africa, Kata Forest, Ouesso, vii.59.

Fig. 30 depicts a male with the usual white bars of the fore and hind wings reduced to a series of dyslegnic spots, those of the fore wing not reaching the subcosta, and only slightly indicated in 1a. The underside exhibits a strong development of melanism in the basal 2/3rd of the fore wing up to the discal line which is reduced in width. On the hind wing the normal chestnut ground colour is replaced by white, but with heavy black streaks in the subcostal region and with a large black mark at the base of the cell. Locality : French Equatorial Africa, Kata Forest, Ouesso, viii. 59.

Range : The subspecies *angustus* ranges from northern Angola, Kasai and Katanga, central Congo and the Kivu region to the Semliki Valley and western Uganda in an eastward direction ; on the western side it extends from Moyen Congo, Gabon, Central African Republic and Cameroon to eastern Nigeria. It also occurs on the island of Fernando Po.

We must now consider an aggregate occurring in the southern Sudan, the northern and eastern areas of Uganda and in N.W. Kenya. These specimens have usually been referred to in literature as *brutus brutus* Cramer. (*Vide* Rothschild, 1900 ; Carpenter, 1928 ; van Someren, 1928 ; Stoneham, 1964.) However, this aggregate is separated from nominate *brutus* by *brutus angustus.* (*Vide* distribution *ante*, and Map 4.) They are variable, some exhibiting the characters of *angustus*, i.e. the narrow fore wing bars in areas 1a–1b, and the comparatively narrow hind wing bar ; others have an expansion of the fore wing bar on the hind margin, and a widening of the bar in the costal region of the hind wing.

In my view, they represent a transitional aggregate between *brutus angustus* and *brutus alcyone* Stoneham, and are unstable. (*Vide* note on *brutus alcyone*, post.)

Charaxes brutus junius Oberthür 1883

(Pl. 3, fig. 31. Pl. 4, fig. 32, Map 4)

Charaxes brutus var. *junius* Oberthür, 1880 : 166.

Charaxes junius Oberthür, 1883 : 728.
Charaxes junius f. *ragazzi* Storace, 1948 : 132.

Characterized by the very narrow creamy yellowish white bars of fore and hind wings and strong marginal spots on both fore and hind wings.

MALE. Fore wing length 42–44 mm. *Upperside.* Fore wing, ground colour black, with slight olive-brown at base of fore wing, more brownish on hind wing, shading to greyish brown on inner fold. Fore wing with comparatively narrow yellowish cream bar crossing the wing from about mid hind margin to subcosta ; widest at hind margin, 6 mm, the spots gradually decreasing in size ; the marks in 1a-1b separated by black vein ; the general arrangement of the spots similar to that of *angustus*. Margin of wing with conspicuous ochreous spots between veins. Hind wing, bar very slightly wider than that of fore at costa, of even width to 4, then narrowing slightly toward inner fold and crossing this above anal angle. Anal lobe with two blue dots. Margin of wing only slightly serrate, more dentate. Tails robust and sharply pointed, 5–4 mm long. *Underside.* The basic pattern similar to that of other *brutus* ssp., but the ground colour is less deep chestnut and the distal portion of the fore wing more brownish, less olive ; the bars are less strongly black-centred ; the postdiscal black spots less intense black except toward the hind angle. The discal band is creamy ; margin of wing distinctly ochreous, broken by intermediate black spots. On the hind wing the basal bars are mainly chestnut, thinly outlined in silvery white ; the discal bar creamy, while the postdiscal black is limited, the upper marks are more arrow-shaped, but the two toward the anal angle are distinct black rings with bluish ocelli. The marginal border is strongly ochreous, black edged with white internervular fringe.

FEMALE. Very similar to the male but much larger, fore wing length 46–48 mm. *Upperside.* Ground colour rather browner than male especially at base of wings and along the inner fold of the hind wing. Creamy discal bands on fore and hind wing broader throughout ; marginal spots on fore wing distinct. Hind wing ochreous lunules well marked. *Underside.* As in the male, but pattern bolder.

I have not been able to examine the form *ragazzi* Storace.

Range : This race is apparently limited to the Shoa districts of western Ethiopia, and is recorded from Sciotalit and Feleklek (Antinori).

Charaxes brutus somalicus Rothschild

(Pl. 4, fig. 33, Map 4)

Charaxes brutus somalicus Rothschild, 1900 : 432.

Characterized by the very narrow discal bars of both wings which are yellowish cream to ochre. Spots on margin of both wings small.

MALE. Fore wing length 40–43 mm. *Upperside.* Fore wing, ground colour black with slight purplish brown sheen on bases of wings, more greyish on inner fold. The fore wing band yellow-creamy white, very narrow throughout, the spots in 1a–1b not more than 3–4 mm wide ; the remaining spots gradually reduced in size as the band tapers toward the costa. Marginal spots small but clear. Hind wing, the band is widest at costa, 4 mm, then tapers to 2 mm at inner fold where it is slightly ochreous ; the mark at the costa set in so that the hind wing band is ' stepped ' and not in line with the hind marginal spot of the fore wing. The margin carries dark ochreous lunules, sometimes obscured ; two blue spots present in the anal angle ; margin of wing slightly dentate. Tails short, robust, 3–4 mm long. *Underside.* Fore wing, ground colour deep chestnut-brown at basal 2/3rds, the distal portion of the wing brownish olive ; the bars and spots of the fore wing greyish rather than black, with narrow black and white edges. The discal band creamy ; the postdiscal triangular black spots narrowly edged greyish, those at the tornus with more greyish distally ; margin with ochreous spots, slightly blackish in between. Hind wing basal bars and lines chestnut finely outlined in white ; discal creamy bars strong and clear-cut. Distal portion of wing paler chestnut ; the postdiscal series of black spots distinct, narrowly edged greyish distally ; the black spot with double purplish blue dots in anal angle ringed with deep ochreous which is continued up the margin ; edge black.

FEMALE. I have not been able to examine this sex, and can find no description.

Range : Found mainly in the southern districts of Ethiopia, ranging from the Harar highlands in the east to Adola in the south, then crossing the Rift to Youbdo in the west. Carpenter reports some evidence of transition toward '*brutus*' [*sic*] in the Didinga Mts region, but this needs clarification.

Charaxes brutus alcyone Stoneham

(Pl. 4, figs 34–35, Map 4)

Charaxes brutus alcyone Stoneham, 1943 : 3.
Charaxes brutus natalensis van Someren & Rogers, 1928 [*nec* Staudinger & Schatz, 1886].

Very similar to *natalensis* Staudinger & Schatz, with which it has hitherto been associated. It is of interest to note that when Rothschild wrote his *Charaxes* Monograph in 1900, he records the statement, under the heading *brutus natalensis*, 'not yet recorded from the coast districts of British East Africa.' He, however, records this race from Kilimanjaro and the coastal belt of German East Africa (now Tanzania). Specimens from Nandi, N.W. Kenya, are stated to agree better with nominate *brutus* than with *angustus*. I have already pointed out that these insects are not typical *brutus* but are a mixed aggregate. We now know that a race of *brutus* does extend all along the Kenya coast and inland to the Kikuyu country *east* of the Rift Valley and that *west* of the Rift we find a mixed aggregate or cline, largely tending toward *angustus*. The coastal insect has received the name *alcyone* Stoneham, and though the characters of the race are not outstandingly different from those of *natalensis*, they are sufficient to warrant recognition.

MALE. Fore wing length 40 mm (average). *Upperside*. Differs from *natalensis* mainly in the formation of the creamy white bar of the fore wing, which is straighter on the distal border, less strongly curved, the three upper spots being in line ; the mark in area 2 is larger, thus the band does not taper so rapidly from this point to the costa. The marginal white spots usually larger and more distinct. The white band on the hind wing slightly wider, being extended basad ; the margin with more conspicuous white triangles or lunules.

FEMALE. The same characters as those of the male are present, to a greater degree, in the female, the hind wing band being very wide and expanded proximad. *Underside*. Very similar to that of *natalensis*, the white bands stronger generally, while the distal portion of the fore wing ground colour is paler, the angular marks less extended.

Range : The coastal belt of Kenya and hinterland, extending inland to the eastern side of the Rift Valley ; also in the adjacent coast of Tanzania.

Charaxes brutus natalensis Staudinger & Schatz

(Pl. 4, figs 36–37, Map 4)

Charaxes brutus var. *natalensis* Staudinger & Schatz, 1886 : 169.
Charaxes brutus var. Butler, 1865 : 625.

MALE. Fore wing length 40–41 mm. FEMALE. Fore wing length 45 mm. *Upperside.* This race is characterized in both sexes by the white fore wing bar, which tapers from the hind margin to 2, then more rapidly up to subcosta. Margin with small ochreous spots on veins in fore wing and some indication of white dashes in the serrations of the hind wing. Hind wing white bar with bluish borders wider than in *brutus brutus*. *Underside.* Ground colour slightly paler chestnut in basal areas but black, white-outlined marks strongly developed ; white bars strong ; submarginal triangular marks well developed in fore wing ; those of the hind wing more in the form of irregular ocelli ; marginal border broad, edge black ; margin of hind wing strongly serrate.

Range : From the Natal district of South Africa, northward through Rhodesia, Zambia, Malawi and northern Mozambique to Tanzania.

Biological note. The early stages of most of the races have been recorded. Numerous food plants are recorded and these include : Euphorbiaceae, *Fluggea microcarpa* ; Tiliaceae, *Grewia forbesi* & *Grewia* sp. ; Melanthaceae, *Bersama* sp. ; Meliaceae, *Turraea* sp., *Ekebergia reupelliana*, *Melia volkensii*, *Melia azarach* ; Sapindaceae, *Philodiscus zambesiacus*. The great variety of food plants accounts for the wide distribution of the species. It is of interest to note that although eggs are freely laid on *Melia azarach* (Tiliaceae) (an exotic, often called Cape or Persian Lilac), the larvae when hatched, refuse to feed and die ; they can however be raised on this plant in captivity.

On three occasions I have found a female *brutus* ' in cop ' with a male *candiope* in a ' charaxes trap '! One such female was caged and she laid a batch of eggs which all produced normal *brutus*!

Charaxes brutus antiquus Joicey & Talbot

(Pl. 4, figs 38–39, Map 4)

Charaxes brutus antiquus Joicey & Talbot, 1926 : 1–5.

Characterized by the thick tails in both sexes and the presence of a series of pale lunules along the admargin of the hind wing.

MALE. Fore wing length 42 mm. *Upperside.* Ground colour black with a slight greeny sheen at base of fore wing, more greenish on hind wing ; the inner fold of the hind wing more greyish. Fore wing, creamy white bar widest at the hind margin, 6 mm in 1a, the inner end of the mark oblique, the remaining marks decreasing in size rather rapidly toward the costa ; margin of wing with small white spots. Hind wing, discal bar extending from the costa, where it is 7 mm wide, and slightly inset to the mark on the fore wing in 1a ; the bar is of about equal width or slightly expanded over the cell area, then tapers to the inner fold above the anal angle ; the bar is slightly greenish on its borders. Admargin of wing with whitish lunules which are rather obscured in the region of the tails ; margin black and slightly dentate, but tails are thick and robust, upper 6 mm, lower 5 mm and more pointed ; anal lobe with double bluish dots. *Underside.* Fore wing, ground colour chestnut at base, rather more ferruginous on distal portion of wing. Bars and spots in basal area black with strong white edging, the spots bordering the white discal band stronger black. Postdiscal triangular black marks lightly bordered with greyish white, the marks at the tornus strong ; margin with alternating black and white spots. Hind wing, basal area chestnut ground colour with silvery white marks enclosing chestnut, but smaller spots adjoining the discal bar, blacker. Discal bar silvery white with irregular outer border offset by a zigzag line of strong chestnut turning to black above the anal angle. Postdiscal row of chestnut triangles, edged greyish internally, is offset by a row of black lunules which form ocelli at the anal angle. Admargin with a more orangy line, edges whitish distally, and accentuated by the black margin. Tails black.

FEMALE. Fore wing length 50 mm. *Upperside.* Pattern of wing generally similar to that of the male but ground colour rather more brownish black. Fore wing creamy bar similar to that of male but bolder, the mark on hind margin 1a 11 mm wide. Margin with rather obscure white internervular spots, more distinct toward the apex of the wing. Hind wing basal area brownish black with slight olive tinge, shading to greyish on the inner fold. Discal band broad, 10 mm at costa, creamy white, with irregular outer border in mid area, tapers toward the inner fold but does not cross it. Admarginal pale lunules somewhat obscured ; edge black, with a very narrow white fringe. Tails thick and robust, upper 10 mm long. *Underside.* Generally similar to that of the male ; fore and hind wing bands silvery white and strong.

Range : Known only from the island of São Tomé in the Gulf of Guinea.

Charaxes andara Ward

(Pl. 5, figs 40–42, Map 4)

Charaxes andara Ward, 1873 : 209.

I referred to this insect, very briefly, in the introductory remarks, where I gave my opinion that *andara* should rank as a species, distinct from *brutus*, and stated my reasons. The sexes are dissimilar, thus differing markedly from any mainland race of *brutus*. That *andara* may have been derived, many millions of years ago, from a common ancestor with *brutus* is not denied, but one must realize that Madagascar now has several endemic species peculiar to the island. The relationship, if any, of *andara* to *brutus* might be clarified by inter-breeding.

MALE. Fore wing length 40–42 mm. *Upperside.* Fore wing, ground colour black with a strong greenish sheen over the cell and base, blacker on distal portion. Margin bluntly dentate, with a distinct projection at upper part of 1b, the dentate appearance enhanced by the strong ochreous white internervular spots ; the wing appears strongly incised in area 2. Discal white band, strongly bluish on borders at 1a-1b where the marks are 7–8 mm wide and conjoined, tapers to 2–3 where the marks are free ; the spot in 4 is much smaller and linear, that in 5 set out, followed by two smaller spots in 6–7, so that the bar is strongly ' kinked ' at 4–5. Hind wing, basal area black with slight greenish sheen, becoming greyish on the inner fold which is edged with rufous. Discal white band, which is 5–7 mm wide at costa, bulges inward over the cell area ; the outer border is here slightly curved and strongly edged with blue, but on the inner border the band tapers toward the inner fold, but stops short at this point. The outer border of the wing is blacker, with a bluish sheen ; the margin strongly serrate ; each serration with a white V at base ; anal lobe greenish on edge, carrying two lilac spots ; the tails long, thin and sharply pointed, 7 mm. *Underside.* Fore wing, basal ground colour light chestnut, the distal portion of the wing more orange-olive. The subcostal marks are very strongly edged with satiny white, the marks at bases of cellules blacker, with narrower white edging. The discal white bar strong but irregular in outline, especially on the outer border at 2–4. The postdiscal series of black marks rather rounded, outlined in bluish grey, particularly on the outer aspect, thus forming ocelli, the black marks more angled at the tornus ; margin with black at end of veins with white in between. Hind wing, basal area lighter chestnut, the basal marks and longitudinal lines narrowly black-centred with white borders ; the discal satiny white bar, narrower than above, narrowly crosses the inner fold at an angle and is flanked proximally by black linear marks, and distally by a darker chestnut zone carrying a zigzag olive line. The submarginal row of linear marks shaded with lilac-grey proximally, terminates at the anal angle in a chestnut ocellus bearing lilac dots ; margin orange-olive, more olive at anal lobe ; edge black.

FEMALE. Usually larger than the male, but occasionally as small ; fore wing length 42–47 mm. *Upperside.* Fore wing, differs from the usual *brutus* female in that the bar is expanded from 4–7 and consists of conjoined discal and postdiscal marks, the mark in 4 extending toward the end of the cell ; moreover, the bar is largely rufous orange in colour. Ground colour in basal area deep brownish black with slight greeny sheen ; the discal area blacker with distinct orange spots on the margin, though small at tornus below the projection at upper part of 1b. Margin of wing less incurved than in the male. The discal bar is unusually wide, white in areas 1a–1b, slightly orange distally, width at hind margin 12 mm in large specimens, usually 10 mm in average females, the mark in 2 quadrate and orange, that in 3 smaller and quadrate or angled distally, followed by a long linear orange mark basal in 4, the long orange mark in 5 set out ; above this the bar divides into two, discal and postdiscal, two marks each in 6–7, though those in 6 may be slightly conjoined. Hind wing, basal area more greyish with slight greenish bloom turning grey on inner fold and slightly rufous on margin. The discal bar white, edged with bluish particularly on outer border, 7–8 mm wide at costa expanding over the cell area to 10–12 mm, then tapering towards but not crossing the inner fold. Border of wing deep brownish black ; anal lobe with two bluish green dots. Margin with conspicuous orange lunules shaded greenish at anal lobe ; margin strongly serrate ; tails long and thin, sharply pointed, 10 mm, with a definite tail at 3 in between, 6 mm long. *Underside.* Pattern as in the male but bolder, the basal chestnut paler but the orange border wider.

There is some superficial resemblance on the upperside between these females and those of *Charaxes cacuthis* ; both are limited to Madagascar.

Range : Limited to Madagascar, the species is generally distributed on the island but the majority of specimens come from the eastern side. Variation in size has been noted. The species has been bred in numbers but unfortunately no record kept of the foodplant.

SYSTEMATIC LIST

Charaxes phoebus Butler

Charaxes phoebus Butler, 1765. Type locality : ' Abyssinia '.

Range : Somewhat restricted and confined to N.W., W. & S. Ethiopia.

Charaxes brutus (Cramer)

Charaxes brutus brutus (Cramer, 1779). Type locality (corrected) : Guinea-Sierra Leone.

Range : Guinea-Sierra Leone, Liberia, Ivory Coast, Ghana to western Nigeria.

brutus angustus Rothschild, 1900. Type locality : Upoto, Bangala country, Kasai in southern Congo.

Range : northern Angola, Kasai, central Congo, Moyen Congo, Central African Republic, Fernando Po, Cameroon to eastern Nigeria ; eastward to the Kivu region and the Semliki Valley to western Uganda, where it meets a cline in eastern Uganda, S. Sudan toward *alcyone* Stoneham.

A cline toward *alcyone*, in the high country east ot the Rift Valley.

brutus junius Oberthür, 1883. Type locality : Ethiopia, Shoa.

Range : western Ethiopia in the Shoa country ; Sciotalit and Feleklek.

brutus somalicus Rothschild, 1900. Type locality : Harar Highlands.

Range : the southern districts of Ethiopia, Adola, and crossing the Rift into Youbdo country to the west, and S.E. Sudan.

brutus alcyone Stoneham, 1943. Type locality : Dida Creek, north of Mombasa, Kenya.

Range : the coastal belt of Kenya, extending inland to the eastern side of the Rift to Mt Kenya. Also in adjacent coastal area of Tanzania.

brutus natalensis Staudinger & Schatz, 1886. Type locality : Natal, South Africa.

Range : from the Natal district northward through Rhodesia to Malawi, northern Mozambique to Tanzania, where it meets *alcyone* in the north east.

brutus antiquus Joicey & Talbot, 1926. Type locality : São Tomé, in the Gulf of Guinea.

Range : only known from the island of São Tomé.

Charaxes andara Ward

Charaxes andara Ward, 1873. Type locality : Madagascar.

Range : Known only from the island of Madagascar.

4. *CHARAXES BOUETI* FEISTHAMEL and *CHARAXES LASTI* GROSE SMITH

Charaxes boueti Feisthamel

References to this species in literature present a rather confused picture, due mainly to the following factors, the paucity of nominotypical material, the variability of the species and the association with it of a rather similar though distinct species, *Ch. lasti* Grose Smith. The picture is further complicated by the curious discontinuity of distribution, which is difficult to explain.

The species can be divided into two groups, on evidence of pattern, as detailed below ;

GROUP 1. *boueti boueti*, *boueti ghanaensis*, and *boueti macclounii* ;
GROUP 2. *boueti rectans* and *boueti alticola*.

Originally described from Casamanca, Senegambia, in 1850, this species is still badly represented in collections ; the few examples of the nominate race all come from the extreme west : Senegal, Portuguese Guinea and Sierra Leone. It has not been recorded from Liberia (Fox, 1965), nor from the Ivory Coast in spite of extensive collecting. A distinct race is recorded from the borders of Togo and Ghana. The species is not recorded from Nigeria, Cameroons nor the northern area of the Central African Republic. This is difficult to explain, since suitable habitats containing the known food-plant *Oxytenanthera* (Solid Bamboo), Gramineae, occur throughout the savannah belt which extends from western Abyssinia to Senegal ; (Zones 16 & 17, UNESCO Vegetational Map, 1959). Even more remarkable is the fact that in the eastern extremity of these zones, a representative of Group 2, viz., *boueti rectans*, occurs. Equally strange is the fact that the third representative of Group 1, viz., *boueti macclounii* occurs in the areas of south Katanga, Zambia, Malawi, S. Tanzania and Rhodesia, and this is separated from western representatives by the whole of the vast low tropical forest of the Congo. The food plants are *Oxytenanthera abyssinica* and *O. brounii*.

The second member of Group 2, viz., *boueti alticola*, is limited to the high Bamboo zones of the Kivu-Kigezi countries, where it feeds on the Alpine Bamboo, *Arundinaria alpinus*, a hollow species.

Variability of the species takes two forms : a) a pale, lightly marked form ; b) a dark, heavily marked one. Moreover, the undersides may be lightly or heavily marked in the two forms. This variation is not seasonal as they can be taken at one and the same time.

Talbot (1927) expressed the view that *alticola* Grünberg was a distinct species, basing this opinion on the evidence of the very strong pattern and rather distinctive white area in the hind wings of the males. He suggested that *alticola* was mimetic of *Charaxes ansorgei ruandana*. Though the two may occur in the same general area, their habitats are different and do not coincide ; *alticola* is restricted to bamboo zones and *ansorgei* to forest, and where the two habitats may be contiguous, *alticola* outnumbers *ansorgei* in the ratio 100–1. This was my experience at the Kanaba Gap, in Kigezi, where I spent three weeks in 1950 and again in 1952.

Talbot failed to note that in female *boueti rectans* there is a pattern transitional between that of *alticola* and *macclounii*, but tending more to the former, as is to be expected.

GROUP 1.

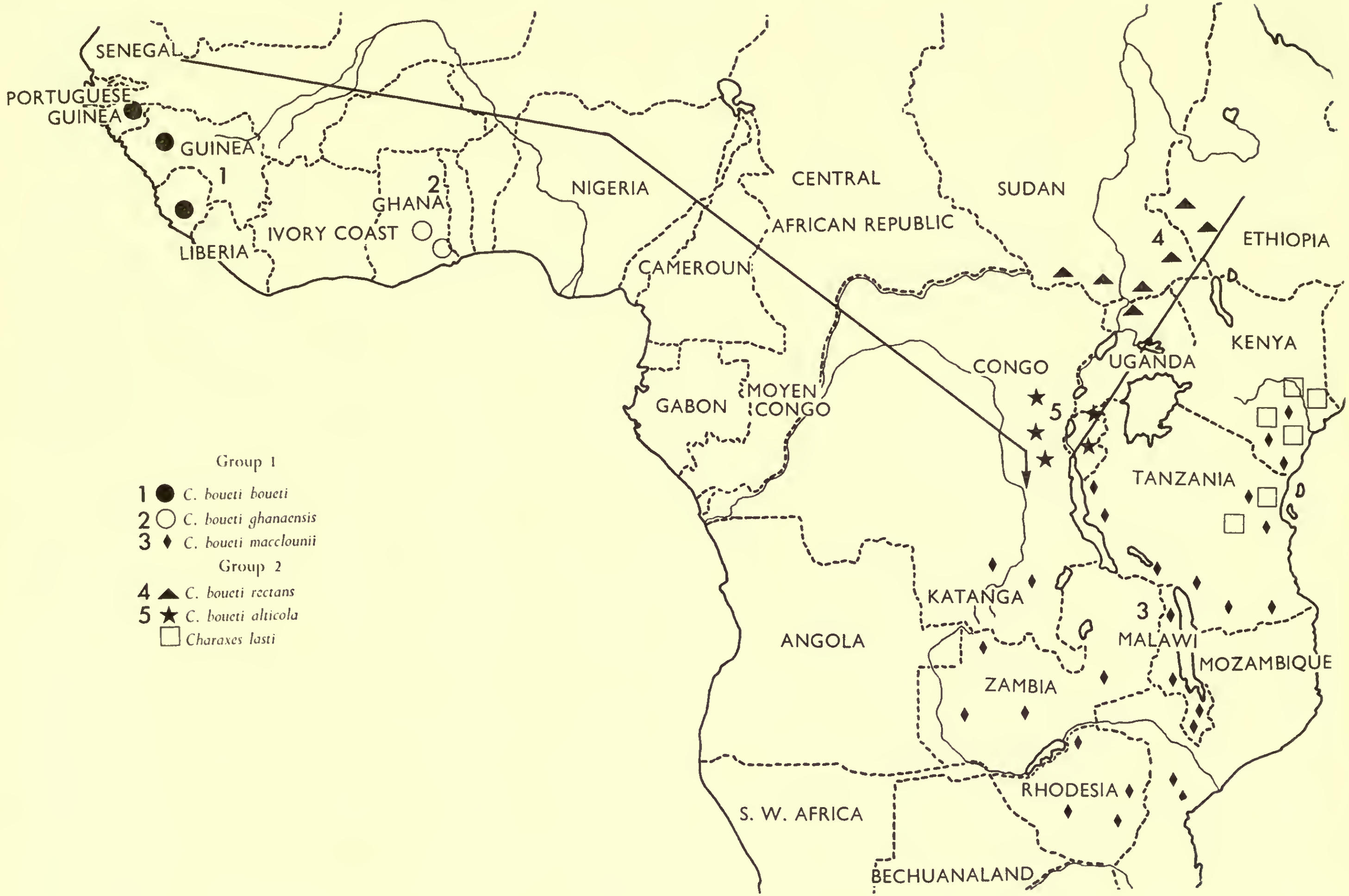
Charaxes boueti boueti Feisthamel

(Pl. 5, figs 43–48, Map 5)

Charaxes boueti Feisthamel, 1850 : 261.

There are two forms, one with strongly marked pattern on an orange ground, the other lightly marked on a paler ground.

MALE. Fore wing length 34–36 mm. *Upperside*. Fore wing, ground colour rufous orange, slightly darker at basal triangle, border black with conspicuous orange spots on outer edge, increasing in size from apex to 1b. Median black spots arranged as follows : an inverted


SENEGAL
PORTUGUESE GUINEA
GUINEA
1
LIBERIA
IVORY COAST
2
GHANA
NIGERIA
CAMEROUN
CENTRAL AFRICAN REPUBLIC
SUDAN
4
ETHIOPIA
KENYA
UGANDA
CONGO
5
GABON
MOYEN CONGO
TANZANIA
KATANGA
3
MALAWI
MOZAMBIQUE
ANGOLA
ZAMBIA
RHODESIA
S. W. AFRICA
BECHUANALAND
Group 1
1 ● *C. boueti boueti*
2 ○ *C. boueti ghanaensis*
3 ♦ *C. boueti macclounii*
Group 2
4 ▲ *C. boueti rectans*
5 ★ *C. boueti alticola*
□ *Charaxes lasti*

Map 5

'comma' mark beyond end of cell, a linear mark crosses the sub-bases of 5–6, followed by crescentic marks of diminishing size sub-basal in 3–1b, and a larger black mark crosses the sub-bases of 7 & 6. The upper part of the disco-postdiscal orange bars are separated by a broader series of black spots crossing 7–6 & 5–4 in a curve and slightly in 3. Hind wing, ground colour rufous orange in the base, followed by a brighter orange discal band, slightly paler at the costa and tapering to above the anal angle ; inner fold paler with some long greyish hair-like scales along 1c. Submargin with a bold black line of contiguous spots from costa in 7–3, then separate smaller spots in 2 to anal angle, the spot at anal angle with two white dots ; anal angle greenish. Marginal border orange with narrow black edge ; tails sharply pointed, 3 mm long. *Underside.* Rather variable, pattern may be strong or almost completely suppressed, irrespective of upperside pattern.

Variation : a. Fore wing, ground colour ochreous buff, the discal and postdiscal zones paler, the distal border of the wing more greyish. Cell area paler, crossed by 3 wavy rusty lines, a comma mark at end of cell, then rusty lines in median series at sub-base 3, becoming black and double in 2–1b, that in sub-base 1b usually strong ; the double black mark at tornus 1b strong and sometimes extended linearly towards border on a greyish ground. Discal and postdiscal pattern suppressed, but border with ochreous buff spots on admargin. Hind wing, ground colour ochreous buff, paler in the discal line, accentuated proximally by a median greyish brown line with rusty borders extending from costa to above the anal angle but not crossing the end of the discal band ; the discal band often with a strong silvery sheen, bordered distally by a series of lunate buff spots outlined in rusty greyish ; submarginal band more greyish toward anal angle, which is greenish with two black dots. Admarginal spots buff, edged distally on edge by more rusty lunules.

Variation : b. Ground colour more strongly ochreous buff, slightly more greyish on the outer borders. Fore wing pattern almost completely suppressed except for the faint rusty lines in the cell. Black marks in sub-bases of 1b and 2 distinct but reduced in size ; tornal black marks distinct but smaller. Hind wing ground colour strongly ochreous buff ; pattern suppressed, although the silvery median line is still well marked but narrow.

FEMALE. Fore wing length 40–42 mm. *Upperside.* Fore wing, ground colour rufous chestnut at base up to discal band in areas 1a–2 ; distal portion of wing blackish brown, margin with series of ochreous spots from apex to 1b, all spots well separated. The disc of the wing with creamy ochre spots, the discal series as follows : two elongate marks in 6–5 followed by an elongate mark at base of 4, the marks in 3–1b of increasing size, that in 1a, a streak. The postdiscal series of spots more rounded, the three subapical spots in 7–5 set in a curve, that in 4 set in and followed by rounded free spots in 3–2, that in 1b usually fused with discal mark in same area. Hind wing, basal area brownish, merging into the paler inner fold. Discal band creamy ochreous, clear-cut on the inner edge but distally flanked by more rufous ocelli with pale centres in 7–6. Submarginal band black, rather irregular on outer border, carrying white dots in 4–3 ; the anal angle olive-green with double white and black dots ; marginal border rufous ochreous, edged with black. Tails mostly black with slight ochre in mid line, 5 & 6 mm long. *Underside.* Fore wing, pattern strong ; the cell crossed by three rusty wavy lines ; the mark beyond the cell end U-shaped. The discal series of creamy spots as above but accentuated proximally with chestnut to black marks, double in 2, ovoid in 1b ; the postdiscal series of creamy spots accentuated distally, and slightly less strongly proximally with black-brown, blacker in 1b ; distal to this line is a zone of greyish lilac with the dark marks in 1b & 2 linear. Hing wing with a strong pattern, the base and sub-base traversed by strong bands of brown with slight greyish mid line ; the creamy ochre discal band strong, extending from costa to above anal angle, tapering slightly and crossing the inner fold ; this band is distally bordered by creamy spots, largest toward costa and diminishing to lines toward the anal angle ; submargin with a series of greyish brown lunules accentuated proximally by a wavy dark brown line ; the admargin is ornamented by a series of creamy ochreous lunules accentuated distally by a more rusty zone, the lunules from anal angle to 4 with black dots, double in the olive anal angle ; extreme edge black with some white fringing between the veins.

Habitat : Savannah and light woodland with patches of Solid Bamboo.

Range : The extreme western countries of the West Coast : Senegal, Portuguese Guinea, Sierra Leone.

Charaxes boueti ghanaensis Rousseau-Decelle & Johnson

(Pl. 6, figs 49–50, Map 5)

Charaxes boueti ghanaensis Rousseau-Decelle & Johnson, 1957 : 151, pl. 62.

MALE. Fore wing length 37 mm. *Upperside.* Differs from nominate *boueti* of the western regions, in being more richly coloured ; the basal rufous orange more intense, but the discal and postdiscal orange spots of a lighter shade and in strong contrast to the base ; the black marks stronger. On the hind wing the basal area is deeper rufous brownish ; the discal rufous orange band is more intense ; the black sub-marginal band wider ; the marginal rufous orange border strongly edged with black. Tails slightly longer, 5–6 mm. *Underside.* Fore wing, pattern similar to the dark form in the nominate race, but stronger, the black marks at tornus and space above stronger ; the black mark in sub-base in 1b in the form of a ring. Hind wing pattern stronger, the dark median bar strong and the silvery cream bands on either side well marked.

FEMALE. Fore wing length 46 mm. *Upperside.* Fore wing, pattern very similar to that of the nominate form, but basal rufous orange strong ; the discal and postdiscal spots bolder, richer ochreous, well separated to area 2 ; admarginal spots more orange. Hind wing, basal area darker brownish and extending to the inner fold above the anal angle ; the discal band clear-cut on inner border, but upper spots of postdiscal line tending to be separated as distinct spots, more fused on lower section as a rufous orange band ; submarginal black band wider ; marginal orange border strong with marked black edge. Tails longish, 8–9 mm, lower one slightly upturned. *Underside.* Fore wing, generally similar to that of the nominate race but bolder, the submarginal row of ochreous spots well ringed in black ; the sub-basal black marks in 1b and 2, strong. Hind wing, pattern bolder, the submarginal wavy dark line particularly strong, followed by a greenish grey zone ; the admarginal ochreous lunules bordered distally with rusty ochreous, strongly marked.

Descriptions taken from a pair of paratypes in the British Museum (Nat. Hist.).

Range : Known only from the savannah woodland around Vane near Amedzofe on the Togo-Ghana border at 3000 ft. Three males and three females taken by African collectors for F. L. Johnson.

Charaxes boueti macclounii Butler

(Pl. 6, figs 51–53, Map 5)

Charaxes lasti Trimen [*nec* Grose Smith], 1894 : 59, pl. 5, fig. 6.
Charaxes macclounii Butler, 1895 : 252, pl. 15, fig. 1.
Charaxes ' *lasti* ' var. *flavescens* Lanz, 1896 : 142.
Charaxes boueti var. *macclounii* Butler ; Aurivillius, 1899 : 235.
Charaxes boueti macclounii Butler ; Talbot, 1927 : 109.

MALE. Fore wing length 36–38 mm. *Upperside.* Fore wing, general ground colour richer rufous orange than nominate race, more closely approaching *ghanaensis*, but rather variable. Basal areas darker than disco-postdiscal bands ; black spots in median line stronger and extending to 1b ; intermediate black spots between discal and postdiscal orange spots in upper half larger and more defined and extending to 2, and often to 1b, thus separating the two rows ;

the upper postdiscal spots in 7–5 in a curve as in the nominate race and *ghanaensis* ; marginal rufous orange present but not so defined. Hind wing, basal area often darker ; the discal rufous orange, paler at costa, in discal line strongly offset by the black submarginal band, which is widest at upper half then tapering toward anal angle and often separated into spots, culminating in the greenish anal angle with its lilac and black spots. Orange border thus wider but black edge less strong. Tails short, upper 2–3 mm, lower 4–5 mm. The upperside may thus be strongly or lightly marked. (*vide* Pl. 6, figs 51–52). *Underside.* The pattern may be strong or weak on a variable ground colour of pale sandy ochreous to dark greyish ochre. The forms are not seasonal.

Variation : a. With a strong pattern. Fore wing, cell with three rusty brown irregular lines, and two lines beyond cell end. Marks in median line on proximal side of discal bar rusty brown in 6, 5 and 3, then black in 2, double in 1b ; the discal bar creamy ochre, paler in 1a–1b ; the postdiscal series of stronger ochreous spots, curved in sub-apex, are ringed in brownish to black ; a double black streak at tornus in 1b ; margin with indistinct ochreous spots. Hind wing, basal area more greyish ochre crossed by rusty brown lines ; the median line strong and in line with the median series of the fore wing, accentuating the inner edge of the discal creamy band, which is widest at the costa and tapering to the inner fold above anal angle ; on its distal side is a series of lunate ochre spots accentuated by rusty brown internally and by brownish grey distally ; submarginal ochre line distinct, accentuated distally by an orange admarginal line ; edge ochreous with narrow black edge and some white internervular fringing.

Variation : b. The whole ground colour more sandy ochreous. Fore wing, pattern only slightly indicated except for the two black marks in 1b and the tornal black line on a greyish ground. Hind wing, pattern also obscured except for the median brownish line proximal to the discal band, which is narrow and may fade out above the anal angle. The anal black dots on a greenish ground well represented.

Intermediates between these two variations often occur.

FEMALE. A somewhat similar variation occurs in the females though the differences are not so striking. Fore wing length 43–45 mm. *Upperside.* Differing from those of the nominate race and *ghanaensis* in its generally bolder pattern. Basal area bright rufous chestnut ; median black spots bold ; the discal and postdiscal yellow-ochre bars bolder, the two series well separated to 2, and slightly in 1b ; the marginal rufous orange spots not so bold and may be obscured. Hind wing discal band wider, clearcut on inner border, some rufous shading on the outer border ; an occasional dark spot present in 6–5 indicating a slight separation of the discal and postdiscal rows in these areas. Submarginal black band bold ; marginal rufous border wider, edged black. Anal angle greenish with black spots well marked. *Underside.*

Variation : a. The basal and distal portions of the wings greyish ochre, paler in the fore wing cell. Pattern mainly as above but subdued ; rusty brown lines in the cell and in upper part of median line, black in 1b and 2 ; the postdiscal creamy ochre spots margined proximally and distally in greyish ; the double mark at tornus black ; marginal spots subdued. Hind wing basal area greyish ochre with rusty brown lines faintly indicated ; median brownish line strong and clearly defining the inner edge of the discal ochre-cream band, the outer border carrying the row of postdiscal ochre lunules edged with brownish, and outwardly defined in greyish ; the submarginal area paler greyish ; the admarginal line ochre with the border more orange, finely edged in black.

Variation : b. Pattern similar, but whole surface yellowish ochre. The median lines on both wings clearly defined.

Intermediates between these two varieties occur and can be bred in one family.

Range : South Katanga, Zambia, Rhodesia, Malawi, western, southern and eastern Tanzania to coast of Kenya.

GROUP 2.

Charaxes boueti rectans Rothschild & Jordan

(Pl. 6, figs 54–55, Map 5)

Charaxes boueti rectans Rothschild & Jordan, 1903 : 540.

MALE. Very similar in general appearance on the upperside to the dark form of male *macclounii* but darker, and at once distinguished by the straight arrangement in the formation of the fore wing postdiscal spots, without any curving toward the costa in the sub-apex. Fore wing length 35–36 mm. *Upperside.* Fore wing, ground colour rich rufous orange slightly darker at the bases, distal portion of the fore wing black. A large black mark at end of the cell ; the median black spots strong often extending to 1b. The rufous orange discal spots tend to be separated in 1b–3 by intrusion of the black median spots in these areas ; the postdiscal rufous orange spots arranged in a straight line from costa to 2, then conjoined with the discal mark in 1b, but often with some black scales indicating line of junction. Marginal rufous orange spots of increasing size from apex to tornus in 1b. Hind wing basal area dark as in fore wing, clearly defined from the rufous orange discal band in the subcostal area where it is paler, by a dark line ; there is also a suggestion of a division of the band into discal and postdiscal by a slight line in this area ; the band is relatively broad to area 4 then tapers toward the inner fold above the anal angle. The submarginal black band of fairly uniform width ends at the anal angle in the olive patch with its lilac and black dots ; there are also two white dots on the margin between the tails ; the rufous orange border, widest at 7–6, tapers gradually to between the tails ; margin black. Tails thin, upper 5 mm, lower 7–8 mm. *Underside.* Fore wing, ground colour fore wing ochre-buff, slightly greyer on the border. Cell with three distinct, rather strong, wavy lines, followed by a double mark beyond cell end ; median marks strong, rusty brown at costa and becoming strongly black in 2 and double or conjoined in 1b. Postdiscal series of spots silvery to ochre, accentuated on both sides by brownish to black, the black marks strongest in 2 and at tornus in 1b with slight darkening in 1a. Hind wing strongly patterned on a buffish ochre ground ; a narrow brown line at sub-base ; median brown band strongly accentuated on either side by silvery white, strongest in disc but fading out at inner fold ; postdiscal line of lunules silvery toward costa but fading out above anal angle ; the postdiscal brownish marks shading to greyish on submargin followed by a silvery ochre admarginal line which shades to greenish at the region of the tails, more green at anal angle, enhanced by black dots, double at anal angle. Border orange to upper tail narrowly edged with greyish to black. There is no great variation on the undersides in a long series of males available.

FEMALE. Fore wing length 40–42 mm. *Upperside.* Coloration generally very similar to that of *macclounii*, but pattern considerably different. Fore wing, base of wing bright rufous chestnut ; distal portion of wing black ; median black marks strong. Discal yellow-ochre spots smaller, and more discrete : two costal marks of about same size, one above the other, elongate-rectangular, spot at base of 4 small and triangular, spots in 3–2 ovoid, that in 1b large, rectangular with indent on inner side, mark in 1a a streak. Postdiscal spots arranged in a straight line from subcosta to hind margin, yellowish ochre to 3, then more rufous to hind margin, contiguous to but contrasting with the discal marks in same area. Admarginal spots orange-ochre from apex to hind angle in 1b, where the spot is double. Hind wing, basal triangle darker and browner than fore, shading to greyish on the inner fold. Discal band narrow, ochre-yellow in colour, fading out toward the anal angle, flanked distally by more rufous postdiscal spots clearly defined at the costal end, ill-defined and merging into discal band in area 3 ; submarginal band black, wide but not strongly defined proximally but with white lines opposite the tails and at anal angle with its two black dots ; marginal border rusty ochre to lower tail, edged black. Tails long, orange at mid base, margins black, 7–9 mm. *Underside.* Generally similar to that of the male, with strongly contrasting pattern. Fore wing, ground colour in cell creamy ochre with three strong brown bars crossing it ; a double bar beyond, often U-shaped. Discal creamy marks strongly accentuated proximally by dark brown to black median lines, double in 1b ; postdiscal straight row of spots silvery ochre to silvery white accentuated on both sides by black, particularly in 2 and at tornus in 1b ; admargin with ochreous lunules, clearly marked as a rule. Hind wing, basal area with strongly marked sub-basal and median bars forming a V enclosing a silvery line slightly edged in black. Discal band clearcut silvery whitish on inner border, more buffish grey distally, where it is outlined by an irregular tapering silvery line on the proximal side of the darker submarginal line, which extends to just above the anal angle ; admargin with silvery creamy lunules with black dots in spaces between the tails; anal angle with greenish ground colour and two black dots ; margin golden-ochre shading olive toward the anal angle, lightly margined in black and white.

Range : S.W. Ethiopia to Sudan and northern Uganda ; Karamoja and Metu, West Nile. Associated with areas of Solid Bamboo in savannah or low rocky hills.

Charaxes boueti alticola Grünberg

(Pl. 6, figs 56–58, Map 5)

Charaxes boueti var. *alticola* Grünberg, 1912 : 559.
Charaxes alticola Grünberg ; Talbot, 1927 : 109 ; Id., 1932 : 9.
Charaxes boueti alticola Grünberg ; Jackson, 1957 : 66.

As will be noted from the above synonymy and the brief reference in the introduction to this insect, some difference of opinion exists as to its status. My personal view is that it is a member of Group 2 of this species-complex, allied to *boueti rectans*, since both are characterized by the almost straight arrangement of the postdiscal spots in the fore wing pattern in both sexes. Moreover, it will be noted that the underside coloration and pattern conform to that of other members of this species.

Upper and underside coloration is variable, but the pattern is constant.

FORM 1. MALE. Fore wing length 35–38 mm. *Upperside*. Fore wing, ground colour at base bright rufous chestnut ; distal portion of wing black or blackish brown. A large quadrate black mark at end of cell followed by large median black marks which extend to the hind margin at 1a. Discal rufous orange spots well separated and in almost a straight line except for that at base of 4, which is set well in, the mark in 1a and in lower part of 1b extended distad and may be in contact with the postdiscal spots in these areas ; postdiscal rufous orange spots in an almost straight line from subcosta to 1a–1b, these spots usually well separated. Admarginal rufous orange spots large and distinct. Hind wing, basal area dark blackish brown, fading to greyish and buff on the inner fold. The discal band is narrow and pale orange to white at the costa widening in areas 5–2, where it is white in colour ; there is no indication of postdiscal spots but the band merges into the rufous orange zone, which is flanked by a row of contiguous black marks in the submarginal line ; border rufous orange, edged black ; anal angle with greenish spots ringed in black. Tails orange at base, black-bordered, short, thick at base 4–5 mm. *Underside*. Fore wing ground colour, greyish ochreous, paler in the cell and base of 1b, usual rufous lines in the cell and at cell end ; discal and postdiscal spots barely indicated and separated by a series of brownish, rather dyslegnic marks from costa to 1b ; a dark U-shaped mark, sub-basal in 1b with a vertical double brownish mark at tornus. Hind wing, ground colour greyish ochre, base with a slightly darker greyish brown area, adjacent to the darker median band forming an open V and enclosing a silvery bar, the outer arm accentuated by narrow brownish edges ; the silvery discal bar is comparatively narrow, extending from costa to above anal angle, where it turns in toward the inner fold ; this bar narrowly edged distally by a narrow brown line ; postdiscal lunules hardly visible ; submarginal zone slightly greyish but hardly differentiated from the paler marginal border, which is narrowly edged with black ; anal angle with lilac and black dots on a greenish ground.

A slight variation of this form is characterised by its generally paler, more orange colour and less deep black in the fore wing. The hind wing, though dark at base, is brighter orange over the distal portion and the submarginal black spots are smaller and well separated. The underside also exhibits a general paler colour, but the silvery bars are strong.

FORM 2. *Variation* : a. A very dark form in which the basal area is the same colour as the distal portion of the wing, both being a very dark chestnut. The discal and postdiscal orange spots stand out in the darker ground. In the hind wing the basal triangle is very dark brownish black, but fading to greyish then buff on the inner fold. The white area of the discal bar in strong contrast, its upper portion may be whitish or all orange ; the submarginal spots are larger and contiguous ; the ocelli at the anal angle strong ; the marginal border darker rufous chestnut, edged in black. *Underside.* Ground colour greyish ochre or putty-coloured. Discal spots ochreous and separated from the postdiscal series by a wide band of chocolate from costa to 1b. Submarginal area of wing greyish ochre with almost complete suppression of the marginal lunules ; the sub-basal U-mark in 1b chocolate and the tornal double vertical mark strong.

Hind wing pattern as in Form 1, but with only the proximal discal band, silvery. The sub-basal area divided up by rufous lines especially in the inner fold. The rest of the pattern as in Form 1, but stronger.

Variation : b. The ground colour is more greyish ochre, except in the fore wing cell, which is buffish ; the discal spots are obscured in the upper portion ; the postdiscal spots also slightly obscured but the brownish intermediate band is stronger up to 1b. On the hind wing, the pattern is stronger, the sub-basal and discal bands strongly silvery, the latter with dark brownish edges, but the pattern in the postdiscal zone and margin rather obscured. (Pl. 6, figs 56–57.)

FEMALE. Fore wing length 42–45 mm. There are two forms.

FORM 1. *Upperside.* The base of the fore wing is chestnut and in contrast with the blacker distal portion of the wing. There are indications of two dark spots in the cell ; median black spots distinct. The discal creamy spots are arranged as in the male, well separated up to 1a ; the postdiscal spots in a straight line from apex to 1b are slightly more ochreous ; marginal spots ochreous. Hind wing basal area brownish black to greyish on inner fold. Discal band white, widest at costa to 3, then tapering to above anal angle. Postdiscal spots, contiguous in 7, are clear in the upper half but fading out toward area 4. Submarginal zone black, with olive anal mark with black dots surmounted by white to lilac lines well developed ; border of wing rufous brown, ornamented with distinct internervular ochre streaks. *Underside.* Fore wing, pattern very bold, and reminiscent of *rectans.* The ground colour is completely broken up by a series of more or less parallel vertical bars. Cell creamy, crossed by three wavy rusty bars ; the discal creamy spots, as above, divided from the postdiscal straight series by a rusty brown band extending from the costa to upper part of 1a, flanked distally by dark marks, 1b–3 and by a greyish ochre submargin in which the creamy ochre spots show up plainly. The creamy ochre line of spots are slightly silvery on margin. Hind wing, basal area greyish brown, joining up with the median bar toward the inner fold, which has three parallel brown lines. The basal and median bars outlined with darker rufous brown, the intervening creamy bars and the discal bar strongly silvery, as also are the series of creamy spots in postdiscal line, outlined distally in blackish which is continuous from costa to anal angle ; submarginal band is complete and greyish brown ; the admarginal ochreous lunules distinct, accentuated proximally with black and distally with double rusty brown spots ; edge black and white.

FORM 2. *Upperside.* Fore wing, ground colour is a deep brown-black, the basal area only slightly browner. The discal and postdiscal creamy spots well separated ; the admarginal spots richer rufous but rather indistinct toward the apex. Hind wing basal area brownish black, browner toward costa. The inner fold greyish ochre. The discal band white, widest at costa then tapering from 3 to the inner fold. Postdiscal white spots distinct in upper portion of the line, then becoming obscured. The admarginal band rufous, with distinct ochreous internervular streaks. *Underside.* Similar to form 1, but pattern stronger and light areas more silvery.

Range : Ruanda & Kivu districts, Uganda and S.W. Kigezi, Kanaba Gap, Ruhiza.

Charaxes lasti Grose Smith

(Pl. 7, figs 59–65, Map 5)

Charaxes lasti Grose Smith, 1889 : 131.
Charaxes lasti Grose Smith ; Grose Smith & Kirby, 1890 : 8, pl. 4, figs 4–5.
Charaxes boueti var. *lasti* Grose Smith ; Aurivillius, 1899 : 235.
Charaxes boueti lasti Grose Smith ; Rothschild, 1900 : 409.
Charaxes boueti lasti Grose Smith ; Poulton, 1925 : 570 [= var. *alticola* Grünberg].
Charaxes boueti centralis Neustetter, 1929 : 391. **Syn. n.**
Charaxes lasti Grose Smith ; Talbot, 1932 : 9.

Described as a species, this insect has, in varying degree, been linked with *Charaxes boueti* Feisthamel, because of its somewhat general resemblance to that species. (See Talbot, 1929 : 148.) Since the two overlap to a considerable extent, and do not interbreed, they must be considered distinct species. Moreover, they have different habitats and food plants, *lasti* laying on *Julbernardia*, *Macrolobium* and *Afzelia*, Caesalpinaceae, and *boueti* on species of Bamboo, Gramineae. The wing-antennae ratio is different (*teste* Dr van Son).

The shape of the two insects is different, in *lasti* the fore wing being less elongate, but outer border more incised ; the hind wing is more rounded on outer border but margin is more serrate or dentate at vein ends.

The upper and undersides are subject to considerable variation, which is not seasonal.

There are two forms in both sexes, a strongly marked form and a lightly marked one. These occur in about equal numbers, irrespective of season, and there are many intergrades.

MALE. FORM 1. Fore wing length 35–38 mm. *Upperside.* Fore wing, general colour rufous orange, slightly darker at the base, distal border of wing black. A rounded black spot beyond end of cell conjoined to or separate from a black line at end of cell ; median black marks in 6–5 larger and rounded or elongate, spots in sub-bases 3–2 and an indication of a mark in 1b. The discal and postdiscal rufous orange bands separated in the subapex by a solid black mark in 7–6, a slightly smaller spot in 5, a streak in 4 and smaller spots in 3–2, otherwise the bands are conjoined. The upper postdiscal spots are arranged in a curve. Marginal border black with rufous orange spots on margin increasing in size from apex to double mark in tornus at 1b. Hind wing, basal area slightly darker, sometimes with a dark costal triangular mark or line defining the costal inner edge of the discal band, which may be paler, the rest of the discal band ill-defined proximally especially toward the inner fold which is pale and buffish in its upper half. The submarginal black band, widest at its costal end where the spots are contiguous, narrows rapidly, the spots decreasing in size and well separated. The anal angle olive-green with double lilac and black dots. Marginal border rufous orange, narrowly edged in black ; margin serrate at veins. Tails thin, upper 5 mm, lower 6–7 mm. *Underside. Variation* : a. Fore wing, ground colour rufescent greyish with slight vinaceous tinge, paler in the cell and mid area of 1a–1b ; cell with three rusty transverse lines, a double or U-mark beyond. Discal and postdiscal series of ochreous spots hardly indicated, except for rusty lines on margins ; margin without spots but tornal mark consisting of two triangular horizontal black marks, edged with bluish grey, strong, double black lunate mark sub-basal in 1b strong. Hind wing ground colour as fore, basal half with faint rusty lines ; discal area crossed by an almost straight silvery white bar proximally edged in black, and on its distal side, faint greyish white lunules followed by an irregular zigzag rusty band in postdiscal zone. Submargin slightly more greyish with distinct buff-white dots from tornus to anal angle, which is greenish with two black dots : edge of wing rusty, with slight black fringe and whitish bases to the serrations and tails.

Variation : b. The fore wing very similar to *var.* a, or even more uniform, the hind wing less strongly patterned, the discal silvery line almost lacking, but the dark line on distal edge, strong.

MALE. FORM 2. Upperside coloration and pattern of fore wing much as in form 1 but ground colour slightly paler, the marginal black border less strong, especially in the hind angle, so that the large marginal orange spot merges with the orange of the postdiscal bar in 1b & 1a. On the hind wing the submarginal black spots are missing or only slightly represented, except for the two at upper angle. *Underside. Variation* : a. Ground colour more ochreous, less greyish vinaceous, so that the pattern shows up very distinctly. In the fore wing the rusty brown lines are strong in the basal half ; the discal and postdiscal bars are indicated more strongly. The two black lunules sub-basal in 1b enclose greyish spots, and the tornal black marks are strong. In the hind wing the rusty lines show up more on the paler ground ; the silvery line is broader and proximally lined with black ; the postdiscal pale lunules are stronger while the submarginal rufous wavy line is strong ; the border more greyish ochre, the edge more rusty.

Variation : b. Ground colour is more rufescent grey with a vinaceous tinge ; the pattern is almost suppressed except for the conspicuous black lunules enclosing grey in sub-base 1b, and the tornal black mark is strong. On the hind wing the pattern is subdued except for the narrow silvery discal line.

Intermediates are common. (Pl. 7, fig. 60)

FEMALE. There are two main forms with many intermediates ; they occur at all times and are not seasonal.

FORM 1. Fore wing length 39–42 mm. *Upperside.* Fore wing, base bright rufous orange ; distal portion of wing brownish black. Median black marks, one heavy rectangular subcostal at sub-bases 7–6, a mark at end of cell separate from or contiguous with marks sub-basal in 3–2 and slightly represented in 1b. Discal and postdiscal series of spots yellowish ochre, spot in 4 in discal line set well in, the postdiscal spots shaded with rufous distally, conjoined with discal marks in 1a–1b, slightly separated in 2, the remainder free. Border black with rufous orange marginal spots, increasing in size from apex to 1b at hind angle. Hind wing basal area greyish rufous, paler on the inner fold, sharply defined from the yellowish ochre band at the costa by a narrow black line, distal border of band shaded with rufous. Submarginal black band strong, consisting of contiguous marks angled on outer border ; anal angle greenish with two black dots surmounted by lilac-white lines ; marginal border orange rufous, edged with black ; margin serrate at vein ends. Tails long and thin, upper 7 mm, lower 9 mm. *Underside.* Variable. Fore wing, base greyish ochre, cell paler ochre, crossed by well marked rusty lines, one sub-basal, one in mid area, the third at end of cell, this last sometimes united to black mark at base of 4 ; median lines strong, rusty coloured in upper half then black in sub-bases 3–2 and 1b, which has a sub-basal black line. Discal and postdiscal series of spots as above but less strong ; submarginal border more greyish with brownish spots along distal edge of postdiscal row, becoming black in 2 and, at hind angle where the black marks are, two horizontal triangles on a bluish grey ground. Hind wing basal area greyish ochre with vertical rusty lines in sub-base ; median line rusty brown by a silvery white line defining the discal creamy yellow bar, which is broad at the costa, tapering rapidly to another silvery line which runs parallel to the median line, both taking an angle toward the inner fold above the anal angle. Postdiscal zone with large diffuse rusty spots, which extend from the costa to above the anal angle ; submarginal band greyish ochre with a satiny sheen, distally bounded by a series of whitish elongate marks accentuated distally by rusty lunules ; border with orange-ochre lunules outlined in whitish ; extreme edge black ; margin serrate at veins.

FORM 2. *Upperside.* Paler and brighter than form 1, the basal area a clearer orange, the discal and postdiscal spots larger and more confluent ; the outer border of the postdiscal spots extended more distad, so that the black border is more restricted, but the marginal spots are larger. Hind wing paler, the basal area not defined and paler ; the discal yellow-ochre band merging into a broad bright rufous orange zone which carries a series of submarginal dyslegnic well separated dark spots, well defined from the more orange border with black edge. Tails long and thin. Anal angle pale olive-green with usual black spots. *Underside.* Paler and more ochreous ; pattern less strong in the disco-postdiscal bands ; border less dark, but greyish lunules more satiny. There is also a satiny patch at the costa between the disco-postdiscal creamy spots. Hind wing pattern less strong ; the median silvery line narrower ; the discal band less defined ; the rusty postdiscal zigzag narrow but clear ; the border less dark ; the admarginal zone more ochre and the margin rusty with narrow black edge.

Range : In coastal forests from Tana River to Shimba Hills, Kwale & Dalgube, Kenya to the Pugu Forest & Tanga district in the Usambara Mts, Tanzania.

Biological notes, by D. G. Sevastopulo

OVUM. Shape as is usual in the genus, spherical, with a fluted and flattened top. Colour very pale green when first laid, developing the usual brown ring round the top after twenty-four hours. Later the whole ovum becomes speckled with brown, the ring broadens and there is a brown dot over the micropyle. Laid singly on the upper surface of a leaf of the food-plant.

Laid 5.x.64, hatched 9.x.64.

1ST INSTAR. Head very dark mottled brown, the horns very short and stout, the upper pair more or less straight, the lateral upcurved, the tips paler. Body purplish olive when first hatched, becoming green after feeding, with a subdorsal series of minute white specks. Anal somite ending in a pair of incurved, purplish brown processes.

Moulted 17.x.64 (Pl. 11, fig. 90.)

2ND INSTAR. Head blackish olive, edged very narrowly with pale buff, the horns also pale buff and with numerous lateral teeth, the points between the upper horns prominent. Body dull green, with a subdorsal series of white specks. Many larvae with a round, whitish, dorsal spot on the 6th somite.

Moulted 23.x.64 (Pl. 11, fig. 91.)

3RD INSTAR. Head brown, studded with minute pale specks, the horns paler and with a pale stripe from the base of the lateral horn to outside the jaws. Body similar to previous instar, the dorsal mark outlined with black.

Moulted 31.x.64 (Pl. 11, fig. 92.)

4TH INSTAR. Head brown, the facial disc green, the horns paler, fairly straight, a pale stripe, edged behind with blackish, from the base of the lateral horn to outside the jaws. Body rather dull green, minutely shagreened with white. A subdorsal series of white specks and also a lateral series consisting of an outer anterior and an inner posterior on each somite. Dorsal mark on the 6th somite white, outlined with black, roughly semicircular in shape, the straight edge anterior and produced into three lobes. Some larvae with an additional white dot outside the main mark. Some with a similar additional mark on the 8th somite, and a few with an additional elongate dorsal bar on the 10th. Anal processes small, white and joined by a transverse white bar, the processes and the bar itself edged below with black.

Moulted 7.xii.64. (Pl. 11, fig. 93.)

FINAL (5TH) INSTAR. Head green, speckled minutely and sparsely with white, and outlined with pale pinkish lavender ; horns slate-grey in front, greenish behind, and studded with minute black points, upper pair fairly long, straight, divergent, lateral pair slightly stouter and shorter, straight, the points between the horns black ; a blackish line behind the pinkish lavender margin. Body fairly dark, bright green, minutely papillated with yellow and with a series of slightly larger white specks laterally. Dorsal mark on the 6th somite roughly semicircular with the straight edge forward and expanded into three rounded lobes, a white spot lateral to the main mark, which may be separate, conjoined or absent. Mark on the 8th somite roughly diamond-shaped, with or without a white spot lateral to it. 10th somite with a short longitudinal dorsal bar, which may be absent. A pale sublateral line. Venter, legs and prolegs glaucous green. Anal claspers and last two segments of venter dull purplish. Anal somite slightly concave, edged with a white line, below which is a purplish one. (Pl. 11, fig. 95.)

Some larvae undergo an additional moult, a thing I have not observed before in *Charaxes*. These larvae are slightly smaller than normal in the 4th instar, they undergo no change in appearance in the 5th instar except a slight increase in size, and the 6th instar is similar to the normal 5th, but very slightly larger. The extra moult appears to have no sexual significance.

The larvae turn dull olive-brown when preparing for pupation, the dorsal marks become slightly tinged with pinkish.

PUPA suspended by the cremaster. The dorsum of the thorax and the first two abdominal somites pale lavender, shading into pale brownish olive posteriorly, this area tapering towards the cremaster and shading into darker laterally. A fine, darker dorsal line on the thorax. Lateral area whitish, very faintly tinged with pinkish, due to numerous fine punctures filled in with that colour. Wing cases similar, with an oval, olive-brown spot on the outer margin below the tornus. Leg sheaths with an indistinct olive-brown spot. The pupa is very similar in appearance to that of *Charaxes protoclea* Feisthamel, *azota* Hewitson. The pupa is dimorphic, another form having the pale lavender areas very pale blue, the olive-brown areas olive-green, and the areas faintly tinged with pink in the first described form, very pale green. (Pl. 11, figs 96, 97.)

Food-plant. *Julbernardia magnistipulata* Harms. and *Macrolobium coeruleum* Harms. (both Caesalpinaceae). Dr van Someren (*Butterflies of Kenya & Uganda*) records seeing a female laying on *Afzelia quanzensis*, and females also lay freely on this in captivity. Newly hatched larvae however, usually refuse to eat *Afzelia*, but if they do, fail to thrive and do not get through the first moult.

Described from larvae reared from ova laid by a female caught in the Marere Forest, of which one pupated 22.xi.64 and a male emerged 2.xii.64.

Another brood, reared from ova laid by a Kwale-caught female, were without dorsal markings up to the 4th instar, when they developed a rough diamond-shaped mark on the 6th somite (Pl. 11, fig. 94).

SYSTEMATIC LIST

Charaxes boueti Feisthamel

GROUP I

Charaxes boueti boueti Feisthamel, 1850. Type locality : Gambia, Casamanca.
Range : West Africa ; Senegambia, Guinea, Sierra Leone.

Charaxes boueti ghanaensis Rousseau-Decelle & Johnson, 1957. Type locality : Ghana-Togo border, Volta River area, 3000 ft, Vane near Amedzofe.
Range : Volta River area, Ghana-Togo.

Charaxes boueti macclounii Butler, 1895. Type locality : Malawi, Zomba.
Range : Malawi ; Rhodesia, Manicaland ; Zambia ; Katanga ; N.E. Angola ; Tanzania, Kigoma, Mpanda, Songea, Njombe, Usambara Mts. (foothills) ; Kenya, Kwale, Shimba Hills, Rabai.

Charaxes ' *lasti* ' f. *flavescens* Lanz, 1896. Type locality : Tanzania, Parumbira.
Considered to be a ♀ of *macclounii*. Type was destroyed during 1939–45 war.

GROUP 2

Charazes boueti rectans Rothschild & Jordan, 1903. Type locality : Ethiopia, Schoa, Kollu, Ob Urga.
Range : W. Ethiopia ; S. Sudan (Imatong Mts.) ; N. Uganda, W. Madi, Metu, Karamoja.

Charaxes boueti alticola Grünberg, 1912. Type locality : Ruanda, Karisimbia Volcano.
Range : Ruanda and Kivu district ; Uganda, S.W. Kigezi, Kanaba Gap, Ruhiza.

Charaxes lasti Grose Smith

Charaxes lasti Grose Smith, 1889. Type locality : Kenya, Mombasa.
Range : The coastal forests of Kenya from the Tana River to the Shimba Hills, Kwale, and Dalgube ; extending to the Tanga district of Tanzania on the foothills of the Usambara Mts and in the Pugu Forest.

Synonym : *Charaxes ' boueti ' centralis* Neustetter, 1929. Type locality : 'French Congo ' error! Type examined and considered to be a female *lasti*.

CHARAXES RICHELMANNI RÖBER AND ***C. EUDOXUS*** DRURY AND ITS SUBSPECIES

Charaxes richelmanni Röber

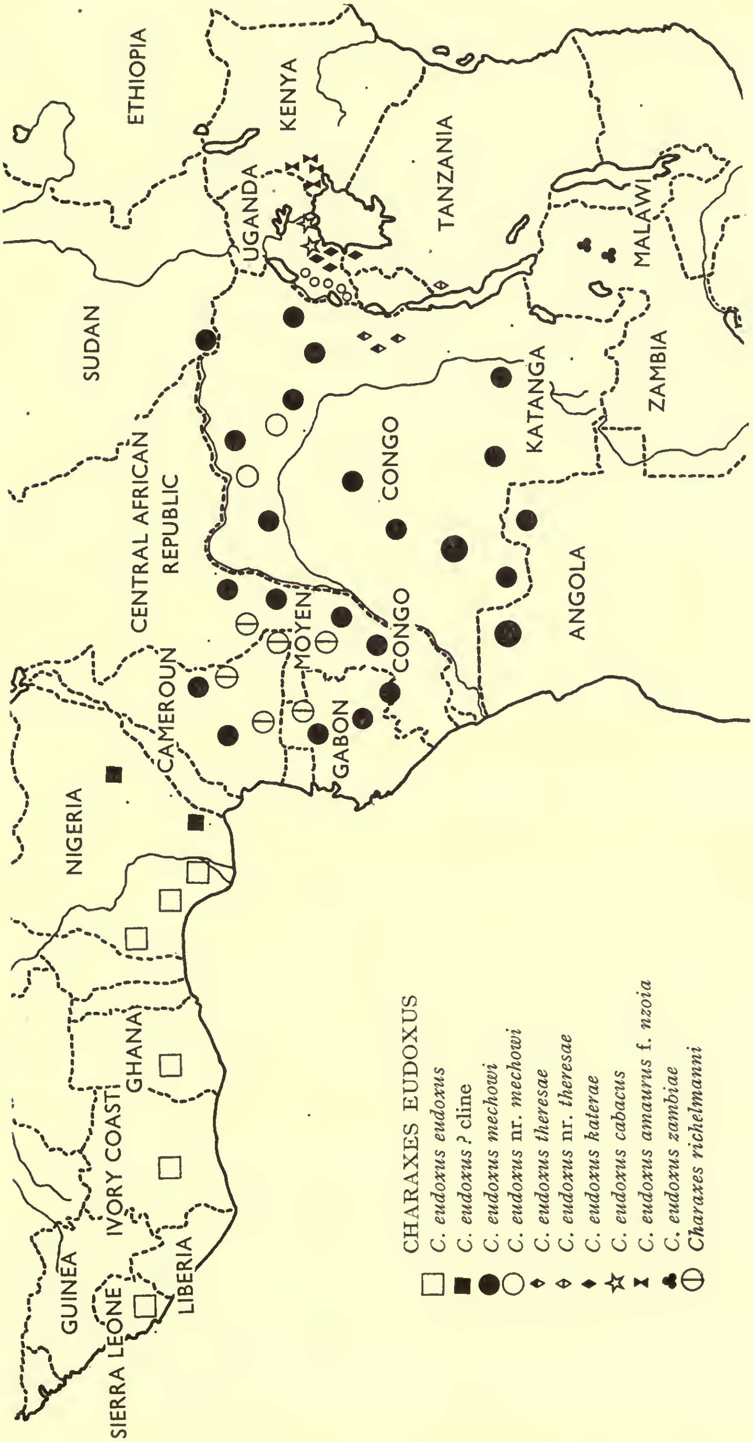
(Pl. 7, fig. 66, Map 6)

Charaxes fallax Richelmann, 1931 : 105.
Charaxes fallax Richelmann ; Poulton, 1926 : 571.
Charaxes richelmanni Röber, 1936 : 578.
Charaxes fallax Richelmann ; Carpenter, 1937 : 96.

The superficial resemblance of this insect to some forms of *Charaxes eudoxus* has given rise to some confusion ; thus, when Holland, 1920, reported on the Lepidoptera of the Congo, he recorded three specimens taken at Medje, as *Charaxes eudoxus eudoxus* Cramer, distinguishing them from *Charaxes mechowi* Rothschild (also taken at Medje) which he considered to be a distinct species, by ' the great reduction in width of the silvery bands on the lower surface of the hind wing '. This identification was accepted by Carpenter (1937), who suggested that the reduction of the silvery lines might indicate that the specimens were transitional towards *eudoxus cabacus* ab. *amaurus*!

I have examined these specimens and consider them to be, without doubt, *richelmanni* Röber, =*fallax* auctt.

MALE. Fore wing length 37–38 mm. *Upperside.* Fore wing, base deep chestnut with a slight vinaceous bloom, extending from the cell end to sub-bases of 1a–1b, shading into the black of the discal zone and the distal part of the wing ; there may be an extension of the black into the cell end. The postdiscal rufous orange bar is almost complete, extending from the hind margin in 1a to 6–7, rather narrow and with little reduction in the size of the spots, the


ETHIOPIA
KENYA
UGANDA
TANZANIA
SUDAN
MALAWI
ZAMBIA
KATANGA
CONGO
CENTRAL AFRICAN REPUBLIC
MOYEN CONGO
ANGOLA
CAMEROUN
GABON
NIGERIA
GHANA
IVORY COAST
LIBERIA
GUINEA
SIERRA LEONE
CHARAXES EUDOXUS
☐ C. eudoxus eudoxus
■ C. eudoxus ? cline
● C. eudoxus mechowi
○ C. eudoxus nr. mechowi
◆ C. eudoxus theresae
◇ C. eudoxus nr. theresae
◆ C. eudoxus katerae
☆ C. eudoxus cabacus
⧗ C. eudoxus amaurus f. nzoia
♣ C. eudoxus zambiae
⊖ Charaxes richelmanni

MAP 6

spots in 1a–1b 4 mm, conjoined, the remainder well separated, the upper ones more rounded ; marginal rufous orange spots large and distinct, extending from 1b, with a double spot, to the apex. Hind wing basal triangle darker than fore, almost black, with a suggestion of chestnut at base ; the postdiscal orange band, widest and pale at the costa, narrows and becomes shaded over as it approaches the inner fold above the anal angle, thus not sharply defined on the proximal border ; the submarginal black band starts just short of the costa, widens in 7–5, thence to anal angle where there are two lilac spots, the inner border of the band ill-defined but the outer clear-cut and dentate ; border of wing rufous orange, of almost equal width tapers at anal angle, edged black, margin serrate and the anal angle rather more marked than in *eudoxus* ssp. Tails thin and sharply pointed, 3–4 mm long. *Underside.* Fore wing, ground colour of basal half up to postdiscal line bright chestnut ; cell and just beyond with four transverse black lines outlined in silver ; a silver and black transverse bar sub-basal in 6–7 in discal line, followed by bolder black marks of irregular shape finely outlined in silver sub-base of 3, a double or conjoined mark in 2, a larger black mark in 1b extended basad, and a smaller mark in 1a. Postdiscal bar tawny orange in 1a–3, finely outlined proximally in white, the spots above with greater amount of white follow the contour of postdiscal bar of above ; this is outwardly bordered by a series of black triangular horizontal marks, large at tornus and decreasing in size to the apex ; these marks are outlined distally in greyish, this greyish colour extending distad along the veins, thus separating the orange lunules on the border of the wing. Hind wing, ground colour in basal area to postdiscal band bright chestnut ; the inner fold with three vertical black lines edged white, the upper discal area with a darker chestnut solid V, boldly outlined in silvery white ; the postdiscal zone distally outlined in silver from costa to above anal angle, with a white line at mid point connecting to the outer arm of the discal V. Zone corresponding to the black submarginal bar of upperside, here represented by dark chestnut and black horizontal triangles, apices distad, finely outlined in silvery grey ; an admarginal line of contiguous lilac marks finely accentuated with black and ending in the olive anal angle with lilac ' eye-spots ', sets off the tawny orange border, which is edged in black finely accentuated white proximally.

The FEMALE is unknown.

Range : Cameroon, Central African Republic, Moyen Congo, Upper Congo to Medje in the Ituri area.

Charaxes eudoxus Drury and its subspecies

The species *Charaxes eudoxus* has a very wide range, extending from the forested areas of West Africa eastward through the Congo to northwest Kenya and the eastern shores of Lake Tanganyika and to the northern block of Zambia. Its distribution tallies more or less with the Zones 5, 7, & 8 as shown on the Vegetational Map published by UNESCO in 1958, and described as ' moist forest at low elevations ' and ' forest-savanna mosaic '.

It is not surprising to find that within this vast area, the species has evolved into several ' aggregates ', not all of which are sharply and clearly differentiated, and in some cases there is a transition from one group to another.

Poulton (1929) dealt with some aspects of this subspeciation, based on specimens then available, when he described the subspecies *amaurus* from north-west Kenya, Mt Elgon area. This was followed by a more detailed survey by Carpenter in 1937. This survey was carried out in order to ascertain the ranges of the several subspecies, their validity, and relationship to each other, and to describe a race from the western shores of Lake Victoria to which I had drawn attention in 1936. Carpenter went to considerable length in trying to find stable characters by which the several races could be distinguished, selecting certain features which he tabulated (Op. cit. p. 86) and comparing these measurements in the several races then recognized. These comparative measurements were not entirely satisfactory or conclusive, because of the degree of pattern variation in each race ; moreover, exact topotypical material in sufficient numbers was not available for a basis. It is also regrettable that in this review some of the plates do not figure topotypical specimens.

It is surprising to note that Carpenter accepted Holland's identification of three males taken at Medje, North Ituri, Congo, as *eudoxus eudoxus* Drury (*vide* Carpenter, 1937 : 97 ; distribution of races) and did not take the trouble to examine these specimens. They were kindly sent to me by the late Dr R. M. Fox of the Carnegie Museum, Pittsburgh, U.S.A. and they are in fact *Ch. richelmanni* Rob. =Ch. *fallax* Rich., Carpenter *et al.*, which is a distinct species, with distinctive genitalia, occurring within the range of *Ch. eudoxus mechowi* in the Congo. Examples of *mechowi* were also taken at Medje, which Holland considered to be a distinct species, unrelated to *eudoxus*!

In spite of extensive material which has accumulated since Carpenter's review, one is still hampered by the lack of topotypical material of both sexes. The division which follows must therefore be taken as tentative.

Charaxes eudoxus eudoxus Drury

(Pl. 8, figs 67–68, Map 6)

Charaxes eudoxus Drury, 1782 : 44, Index, pl. 33, fig. 4.
Charaxes eudoxus Drury ; Carpenter, 1937.

MALE. Fore wing length 38 mm ; outer margin slightly incurved. *Upperside.* Fore wing, basal triangle dark chestnut, with slight chestnut along costa to mid point, merging into the black ground of the distal portion ; slight encroachment of the chestnut colour toward end of cell. Postdiscal bar paler and more developed than in other races, extending from the hind margin to 7, widest at 1b (5 mm), the spots gradually decreasing in size and becoming more discrete from hind margin to 7 ; margin with distinct rufous orange internervular lunules, double at 1b and extending to the apex. Hind wing basal triangle darker chestnut inclining to blackish towards costa ; discal band orange-rufous, paler and widest at costa, slightly constricted at 7, then widening slightly and tapering toward anal angle but not crossing the inner fold ; outer edge straight, contiguous with the black postdiscal band, which extends from just short of the costa to just above the anal angle, of about even width to area opposite tails, then narrowing slightly, outer margin dentate. Border paler rufous orange ; margin black. Tails relatively short, upper 4 mm, lower 3 mm, black. Anal angle black with slight indication of one or two purple-blue spots. *Underside.* Fore wing, basal ground colour chestnut in subcostal area to subapex, crossed by black lines strongly bordered in silver ; bases of 1b–3 with large black marks edged in silver and bordering the postdiscal bar, which is ochreous on inner edge but orange distally, bordered distally by a black tapering zone, widest at hind margin and carrying bluish grey triangles and lunules to subapex ; border with orange lunules separated by black. Hind wing basal area chestnut, traversed by narrow black lines bordered in silver, most pronounced in the discal line which is Y-shaped at the costa, extending to and widening above the anal angle, bordered outwardly with chestnut, interrupted on the outer postdiscal line by slightly darker chestnut triangles outlined in greyish olive, accentuated basally by a series of black lunular marks edged distally with purplish grey and bordering the paler chestnut border which extends to anal angle which is olive, carrying two violet-white dots ; edge black, bordered internally with purple-grey.

Description based on a male specimen from Sierra Leone, Freetown. (Univ. Mus. Oxford.)

FEMALE. Fore wing length 45 mm ; outer margin of wing less incurved than in the male. *Upperside.* Fore wing, basal area paler chestnut and more extended towards the discal line and in the cell, where there are two dark marks, one subcostal and the other at the cell end ; rest of wing black, traversed by an ochreous orange bar in the postdiscal line, widest at the hind margin (8 mm), gradually tapering to 7, but there are indications of orange scaling sub-basal in 5–7 in the upper discal line. Margin with small orange internervular spots. Hind wing basal area darker chestnut, shading to brownish towards costa ; orange discal band wide, slightly paler towards costa, of equal width, 7 mm, to upper tail then gradually decreasing to above anal angle, inner edge almost straight but outer edge slightly dentate ; outer border pale tawny orange ; anal angle black with two lilac spots ; edge strongly black ; tails short, rather stumpy, upper 3 mm, lower slightly shorter. *Underside.* Pattern as in the male, but bolder ; the discal bars of both wings wider and paler, more whitish ochre, bordered orange distally.

Description based on a female taken at Freetown, Sierra Leone. (Univ. Mus. Oxford.)

Range : Sierra Leone, Ghana, Ashanti ; ? Ivory Coast ; thus *not* crossing the Togo-Dahomey divide. Records from Buea, Cameroons doubtful, since south-eastern Nigerian specimens are not nominate *eudoxus eudoxus*. Hollands' record from Medje, Ituri, accepted by Carpenter, is erroneous (*vide* introductory remarks).

Charaxes eudoxus mechowi Rothschild

(Pl. 8, figs 69–74. Pl. 9, figs 75–77, Map 6)

Charaxes eudoxus mechowi Rothschild *in* Rothschild & Jordan, 1899 : 454, [in index], pl. 8, fig. 3.

Charaxes eudoxus mechowi Rothschild ; *in* Rothschild & Jordan, 1900 : 418–420.

Charaxes eudoxus mechowi Rothschild ; Carpenter, 1937 : 93, pl. 3, fig. 9.

Specimens allocated to this subspecies represent a variable aggregate occurring within a very wide area. The variations are not associated with definable areas, but turn up here and there.

It is advisable therefore to quote Rothschild's description (1900) of the type of this race.

MALE. 'Length of fore wing 43 mm. Band of fore wing above about 6 mm distant from tip of vein SM2, strongly tapering costad, stopping at SC5, four upper spots small, luniform (type) or rounded elongate.

Black postdisco-marginal band of hind wing interrupted at veins R3–M2, or M1 & M2, anteriorly as wide as or a little wider than posteriorly, considerably narrower than the admarginal band. On the underside the submedian and median bars M1–M2 very heavy, patch-like ; black costal and subcostal bars of submedian and median series absent.'

This description is quoted because no topotypical North Angolan examples are available to me. However, I have a specimen from the southern Kasai which agrees with the type, and a comparative description of this with nominate *eudoxus* is desirable.

The main features on the upper surface of the male are : basal area of fore wing brighter reddish chestnut ; the distal portion of the wing blacker ; the postdiscal row of rufous orange spots much reduced in extent, widest in 1b, it tapers rapidly to 3, remainder of spots vestigial. Hind wing basal area as in nominate race ; disco-postdiscal rufous orange band wider, encroaching on the submarginal black bar from above anal angle to 5, thus reducing this bar in its lower half very considerably ; the marginal rufous orange border wider and richer ; the marginal black narrower ; the tails longer and thinner.

Area 1

Northern Angola, Kasai and western Katanga, Moyen Congo, Central African Republic, Cameroons to eastern Nigeria. Dominant form.

MALE. Fore wing length 39–40 mm. *Upperside.* Fore wing, basal area reddish chestnut ; distal 2/3rds of wing black, extending from the proximal edge just short of the apex of the cell to just internally of the postdiscal orange bar on hind margin ; this bar richer in colour than nominate *eudoxus*, less wide in 1a–1b and tapering rapidly to 2–3, then represented by spots of decreasing size to 4, obsolete beyond. Margin with small rufous orange spots, double in 1b, and extending to the apex. Hind wing basal area chestnut, shading to blackish toward costa ; the rufous orange discal band, very slightly paler at the costa where it is 6 mm wide, is strongly indented on its inner border at 6–7 then expands slightly, to taper again to above the anal angle, the band is thus of uneven width and ill-defined in its lower half ; the submarginal black bar is widest at its upper half and then represented by contiguous spots from 5 to the anal angle where the last spot has two lilac spots. Border mainly rufous orange of even width, but tapers slightly near the anal angle ; edge narrowly black with slight white fringe in interspaces ; margin slightly serrate ; tails thin, upper 4–5 mm, lower 3–4 mm. *Underside.* Fore wing, basal area up to postdiscal zone, chestnut, but basal half of costa silvery white ; cell and sub-bases 5–7 with irregular black marks outlined in silver ; a large elongate black mark at base 1b filling the whole area up to the postdiscal zone, thinly outlined in white ; space above in 2 with two rounded black spots outlined in silver, one basal, the other touching the postdiscal line where there is a smaller black mark similarly outlined ; postdiscal zone orange in 1a–1b, becoming more rufous to sub-apex and ornamented with greyish loops decreasing in size up to costa ; border of wing rufous chestnut in apical half but with black triangular marks contiguous in 1b–2 and with greyish between apices on orange ground. Hind wing, basal area rufous chestnut with a V-shaped silvery mark, apex toward inner fold where there are three black lines widely bordered in silver ; a slightly curved silvery line extends from costa to above anal angle, touching the outer angled arm of the V-mark ; the postdiscal zone slightly darker and carrying a series of greyish V-marks apices directed outward, followed up by a line of broken dark marks abutting on the more reddish border which is edged outwardly in black ; anal angle more ochreous olive, with a large and small lilac ' eye-spots '.

FEMALE. *Upperside.* Somewhat similar to nominate female but with brighter chestnut at base ; fore wing bar narrower and placed nearer to the margin which has larger orange spots. Hind wing, generally brighter orange, with discal band considerably wider and more curved on outer edge, thus reducing the width of the postdiscal band which, though slightly irregular on the inner edge is dentate on the outer, the band slightly decreasing in width toward anal angle where it expands slightly ; border wider than in nominate *eudoxus*, more uniform in width and more narrowly edged in black. Tails longer, more pointed, upper 6 mm, lower 5 mm. *Underside.* Basal areas of both wings bright chestnut with similar silvery bars and black marks as in the male, but fore wing bands more orange, darkening slightly toward apex of fore wing ; tornal black marks strong. Hind wing border brighter rufous orange.

These descriptions are based on specimens from southern Kasai, and are applicable to a large majority of specimens from further north, but individual variation is considerable. In the area from Leopoldville to Cameroons and east to the Semliki Valley we encounter an aggregate which, though conforming to the general pattern of *mechowi*, differs mainly in the extent of the rufous orange spots in the fore wing bar and the shape and extent of the black submarginal bar in the hind wing.

Variation : a. The fore wing bar though narrow, consists of rufous orange spots of decreasing size from 1b to 6 ; the marginal spots larger than in nominate *mechowi*. The hind wing basal area blacker toward costa ; the submarginal black bar slightly heavier though similar in shape.

Variation : b. Upperside generally darker, the fore wing postdiscal bar being limited to rather obscure rufous spots in 1a–1b ; hind wing pattern as usual but darker. Ouesso, Moyen Congo (*Jackson*).

Area 2

The Congo forests east of the Congo River to Ituri and the Semliki Valley.

In this area there is a noticeable tendency towards increase in size and darkening of colour, but the pattern is, in the vast majority, that of *mechowi*.

Area 3

Western Uganda, Kigezi Province, Kayonza forests south of the Ishasha River.

In this aggregate, males and females are more intensely coloured above and below.

MALE. *Upperside*. Fore wing postdiscal bar is more extended, the rufous orange spots usually reaching 5, occasionally 6, but a noticeable feature is the narrowness of the bar in 1a, 1b–2, so that there is not the rapid tapering of the bar from the hind margin, the marginal orange lunules strongly developed. Hind wing, the black costal patch in the basal area is stronger, thus contrasting with the upper end of the discal band which is here pale and wide, but constricted in 7 then widening to 4 and tapering to above the anal angle ; the submarginal black bar is strong and similar in form to that of *mechowi*, more solid and in its widest upper section, the black is extended distad into the rufous orange border along the veins ; the black edge is well marked. *Underside*. General pattern similar to typical *mechowi* but stronger.

FEMALE. *Upperside*. Generally more richly coloured, the reddish chestnut at the bases of the wings stronger. Fore wing, rufous orange bar is deeper in colour and the whole bar is narrower, especially in 1a, 1b & 2, and extends to 6 or even 7. There is often an orange spot subcostal in 7 and another mark beyond end of cell. Marginal spots pronounced. Hind wing, discal band, pale at the costal end and narrow, widens in 5, then gradually tapers to above the anal angle, reaching the inner fold ; pale in the mid area, it is strongly shaded orange on the distal border ; submarginal black bar stronger than in *mechowi*, the anal angle with two distinct lilac spots ; marginal border richer rufous orange, olive at anal angle ; edge black with white internervular fringe. *Underside*. Pattern generally similar to typical *mechowi* but stronger.

Range : Area 1, northern Angola, Kasai and western Katanga, Moyen Congo, Central African Republic, Cameroons to eastern Nigeria.

Area 2, Congo, east of the Congo River to Ituri and Semliki Valley. S.W. Sudan?

Area 3, Uganda, Kigezi District, Western Province, in the Kayonza forests of the Ishasha River Valley.

Note that this area (3) abuts on the Ruanda-Urundi and Lake Kivu areas.

Charaxes eudoxus theresae Le Cerf

(Pl. 9, fig. 78, Map 6)

Charaxes eudoxus theresae Le Cerf, 1932 : 405.
Charaxes eudoxus theresae Le Cerf ; Carpenter, 1937, pl. 5.

I have before me the ♂ type and three ♂ paratypes kindly sent to me by Dr P. Viette of the Paris Museum. Carpenter (1937) upheld this race, citing as diagnostic characters : Fore wing postmedian band very wide at base, (8 mm entire 1–2) rapidly decreasing in 2 to 2 mm ; beyond nerve 3 there are 3 spots, the last minute.

Marginal spots smaller than in *mechowi*. The general form of the hind wing rufous orange band is broader than in *mechowi* ; the postdiscal black band also wider and less tapering. This description refers to the type. The paratypes show that in the fore wing, postdiscal bar is widest in 1b, tapering rapidly to 3–4 ; marginal spots may be strong. Hind wing black submarginal bar variable, wide as in the type or reduced to a series of discrete spots in the lower half, but upper half with conjoined spots. The female is not known.

This aggregate is thus unstable and shows a transition between *mechowi* and the Kigezi form.

Range : The western shores of Lake Kivu.

I have two specimens from the north-east shore of Lake Tanganyika taken at Kigoma. They are rather darker overall than Kivu specimens, but the fore wing pattern is very similar ; the hind wing rufous orange band is more restricted in 5–6, where the bar is at its widest, tapering rather rapidly to above the anal angle. The submarginal black bar is rather heavy in its upper half, then tapering to the anal angle which has the usual lilac-white dots. Marginal rufous orange border less wide, being encroached upon at the upper angle by the black bar.

These Kigoma specimens are not *mechowi* but show an approach towards *eudoxus* of the Kigezi area and *theresae*. The female has not been taken.

Charaxes eudoxus katerae Carpenter

(Pl. 9, figs 79–82, Map 6)

Charaxes eudoxus subsp. nov.? van Someren, 1936 : 178–184, pls 19–23.
Charaxes eudoxus katerae Carpenter, 1937 : 91, pl. 1, fig. 5, pl. 2, fig. 5.

On an average slightly smaller than the aggregate from the Kigezi area and agreeing more with nominate *cabacus* Jordan from the Entebbe forests. The general impression of the upperside is that this insect might be a melanistic variant of *cabacus*. It was for this reason that I hesitated to apply a name to it in 1936, when it was represented by a single male. In recent years, and on different occasions, several males and females have been trapped in the Katera forest, near Sango Bay. The males are remarkably constant on the upper surface and the female is quite unlike those of other races of *eudoxus*, but both are subject to variation on the underside.

MALE. Fore wing length 39–40 mm. *Upperside*. Fore wing, ground colour almost black, with a slight indication of deep chestnut at the base of the wing ; the postdiscal zone with a trace of rufous spots in 1a–1b, and occasionally a mere trace in 2. Margin with small rufous spots seldom extending to the apex. Hind wing with very obscured pattern ; basal area mostly black, a slight trace of a rufous chestnut band most apparent at the costa, but suffused over in the disc ; submarginal black band wide at upper end near the costa, then tapering slightly to the anal angle ; border narrow, dark rufous ; tails short and thick at base, 4–5 mm long, edge narrowly black. *Underside*. Pattern generally similar to that of *cabacus*, but chestnut ground colour over distal portion of wings suffused with a vinaceous bloom ; admarginal greyish triangles well marked in fore wing, marginal orange present only at tornus. Silvery lines and bars as usual in the species.

An interesting variation has the outer border of both wings shot with bluish grey, due to increased size of the greyish admarginal triangles in the fore wing, and in the hind wing, beyond the submarginal chestnut area shot with grey, there follows a thin black line outwardly bordered with mauve and chestnut internervular lunules.

Form resembling *amaurus* Poulton. *Upperside.* Fore wing, in this form the suppressed pattern is more noticable, the basal chestnut is slightly more extended, and the trace of the postdiscal bar may extend to 3 ; the marginal spots are larger. On the hind wing, the discal band is more apparent, and the submarginal black band correspondingly more sharply defined ; the rufous border slightly wider. *Underside.* Ground colour paler rufous, with practically all trace of the silvery lines wanting, or just slightly indicated, but black marks still present. (Pl. 9, fig. 79.)

FEMALE. *Upperside.* Bears a strong resemblance to the female of *Charaxes lucretius* Cr. but the fore wings are more pointed. Fore wing length 44–45 mm. Base chestnut, with an occasional paler subcostal mark at cell end, but extent of chestnut variable toward hind area, rest of wing black, traversed by a postdiscal row of creamy ochreous spots contiguous in 1a–1b, but free from 2–6, spot in 2 usually round, remainder rather ovoid ; margin with distinct rufous orange spots, double in 1b, and extending to apex. Hind wing, basal area blackish brown, paler on inner fold ; discal band creamy ochre with rufous orange shading on distal border in lower half ; inner border with slight kink at 5, outer border almost straight ; submarginal black band strong, rather wide, with dentate outer border ; border orange-ochre ; edge black. Tails thin, 5 & 4 mm long. *Underside.* Very similar to male, especially the variation mentioned above, but pale bands of upperside well represented below.

Form resembling *amaurus* Poulton. *Upperside.* Basal area fore wing brighter chestnut ; postdiscal bar with creamy ochre spots more irregular in shape. Hind wing ochre band less shaded with orange rufous ; submarginal black zone bolder. (The resemblance to female *lucretius* is thus enhanced.) *Underside.* Reddish brown, devoid of silvery bars and lines, but black marks in fore wing strong ; bands of upperside strongly represented below. (Pl. 9, fig. 80.)

Range : Uganda, western shore of Lake Victoria in Buddu district in the Malabigambo forest area at Katera.

Charaxes eudoxus cabacus Jordan

(Pl. 10, figs 83–84, Map 6)

Charaxes eudoxus cabacus Jordan, 1925 : 288.
Charaxes eudoxus cabacus Jordan ; Carpenter, 1937. [*partim.*].

When considering this race, we are faced with the problem of dealing with an aggregate which has evolved into two distinct ecological groups from west to east. This was remarked on by Carpenter (1937 : 89), but he was content to refer to the two groups as nominate *cabacus* Jordan. Furthermore, he drew attention to the fact that Jordan did not have a female associated with his male from Entebbe, but he mentions that I had described a female from Kitale in 1929 and figured it in the same journal in 1936, under the name *cabacus* Jordan. He therefore suggested that this insect should be considered the neallotype.

The problem is further complicated by the fact that in 1929, Poulton described *Ch. eudoxus amaurus* as a distinct race from the Kitale district, S.E. of Mt. Elgon, the chief character of which was the total suppression of the silvery marks on the underside in both male and female. As quoted by Carpenter (1937 : 90), I subsequently bred a family from a known parent which contained examples of both *amaurus* and ' *cabacus* '. I therefore came to the conclusion that *amaurus* was a variety and not a geographical race, on the assumption that Kitale specimens were indeed *cabacus* Jordan. Having examined numerous specimens from both Entebbe and S.E. Elgon, I can confirm Carpenter's remark that material from the eastern areas differs from nominate Entebbe specimens. It is unfortunate that Carpenter should have figured an example of the eastern aggregate (Tiriki Hills) as typical *cabacus* (pl. 1, figs 2 & 3), and not a topotypical example from Entebbe. Carpenter notes that some Entebbe examples ' come quite near to the new subspecies ...*katerae* from a locality further west, on the west coast of the northern part of Lake Victoria '.

I therefore propose to deal with this complex as representing two distinct geographical races, *cabacus* Jordan from the Entebbe area and *amaurus* Poulton from N.W. Kenya.

MALE. Size generally smaller, fore wing length average 38 mm. *Upperside*. General colour as in more western examples (Toro and Kalinzu), but basal rufous chestnut slightly more restricted toward hind margin ; a black mark often present in the cell toward end. Postdiscal rufous orange bar very narrow in 1a–1b, seldom wider than 4 mm, the marks here contiguous, the remainder free and of decreasing size to 6 ; marginal spots well developed. Hind wing basal area chestnut shading to black over bases of 6–7 where it encroaches on the rufous orange discal band. The latter is slightly paler at the costa and kinked in 6, where it is narrow, widening slightly, but still comparatively narrow ; the submarginal bar is wide to 3 then tapering toward the anal angle ; thus the rufous orange border is narrow as a rule ; edge black. Tails short, 5 mm. *Underside*. General pattern as in *mechowi*, but chestnut ground colour paler, with full complement of silvery lines and bars ; black marks 1b–2 moderately strong.

FEMALE. No topotypical females are available for study. The female figured by Carpenter (1937, pls. 3 & 4, figs. 10 & 10a) belongs to the eastern race.

Range : Forests around Entebbe : Zika, Kisube, and ? Mabira.

Charaxes eudoxus amaurus Poulton

(Pl. 10, figs 85–88, Map 6)

Charaxes eudoxus amaurus Poulton, 1929 : 478–81.
Charaxes eudoxus cabacus f. *amaurus* Poulton ; van Someren, 1929, 1936.
Charaxes eudoxus cabacus ab. *amaurus* Poulton ; Carpenter, 1937 : 94, pl. 1, fig. 4, pl. 2, fig. 4, pls 3 & 4, figs 10 & 11.

It is unfortunate that when Poulton described the race *eudoxus amaurus*, only one form was available to him. It is now known that there are two forms within this aggregate. If this aggregate is to be considered a valid subspecies, the name *amaurus* must be utilized for it. Since the original description applies to only one form, it would appear desirable to refer to the second form by an infra-subspecific name...form *nzoia*, described below.

The nominate form of *amaurus* is comparatively common amongst the aggregate of N.W. Kenya.

MALE. *Upperside*. There is little or no difference from males of the eastern block, but on the *underside* the characteristic silvery lines are entirely wanting or vestigial ; the black marks are reduced in size, but otherwise normal.

FEMALE. *Upperside.* Identical with females of the eastern area, either with or without rufous orange spots in subcostal area of fore wing. *Underside* without silvery lines.

Form *nzoia* forma n.

MALE. *Upperside.* Differs from the nominate *cabacus* by having the basal areas of fore and hind wing brighter chestnut ; the rufous orange bar of the fore wing not so restricted in the hind portion in 1a–2, the remaining spots decreasing in size and reaching 3–4. The hind wing rufous orange band wider, not so narrow and suffused over in lower half, where it merges into the inner fold above the anal angle ; the black submarginal bar thus narrower in its upper half ; border slightly narrower. *Underside.* Pattern as in nominate *cabacus*, but black marks in fore wing less solid and large.

FEMALE. *Upperside.* Fore wing basal area brighter rufous, black area in disc tapering rapidly and not reaching 1a, subcostal area invaded by trace of rufous marks, one beyond cell and two smaller in 5–6. The postdiscal orange band is broad in 1a–1b, lessening in width from 2 upwards to 6, 7. Marginal spots strong. Hind wing basal area rufous without darkening toward costa ; discal band tawny orange, broad, widest in 5 then tapering to above anal angle. Marginal border relatively narrow ; tails rather short and stumpy at base, upper 5 mm, lower 4 mm. *Underside.* Pattern as in the male but pale bars on both wings conspicuous ; silvery lines less strong ; black marks in fore wing less strong.

Holotype male. N.W. KENYA : Kitale, ix.1933. (Pl. 10, fig. 87.)

Allotype female. Same data. (Pl. 10, fig. 88.)

Distribution : Both forms occur in about equal numbers in the forested areas east of the Nile. Recorded localities are : Tiriki Hills, Kakamega, Kaimosi, Nandi, TransNzoia, in S.E. Elgon area, Kitale.

***Charaxes eudoxus zambiae* ssp. n.**

(Pl. 10, fig. 89, Map 6)

The discovery of this very distinct subspecies extends the south-eastern range of *Charaxes eudoxus* very considerably.

MALE. Fore wing length 39 mm. *Upperside.* Fore wing, pattern somewhat like *eudoxus amaurus* f. *nzoia* but distinguished by the duller basal chestnut and the much paler tawny orange bar, which extends from the hind margin where the marks are conjoined in 1a–2, then as discrete spots of diminishing size to 6. Marginal spots large and distinct. Hind wing basal area chestnut, shading to black in the costal region and to greyish brown on the inner fold. Discal band pale tawny orange of about equal width almost throughout, then tapering toward the anal angle ; submarginal black bar wide, tapering only at anal angle, almost straight on inner border, dentate on outer ; border pale tawny orange narrowly edged in black. *Underside.* Ground colour rather paler rufous chestnut, with paler rufous on outer border of wings. Silvery lines and bars as usual ; black marks in fore wing strong. Tails thin, 6 & 5 mm long.

The FEMALE is still unknown.

Holotype male. ZAMBIA : Shiwa Ngandu, [near Danger Hill, east side Upper Loangwe Valley], 29.xi.62 (*C. B. Cottrell*) in B.M.(N.H.).

Range : Known only from Loangwe Valley, Zambia.

Charaxes eudoxus ? subspecies, status uncertain

Under this heading we have to consider specimens from the Sudan, one taken in the Imatong Mts in the Mongala Province and one from Bendi, south west of Yambio. There is also a specimen taken in the forests at Arua in north-western Uganda.

Carpenter (1937) placed the two Sudan specimens as *mechowi*, but if this is correct they represent a very dry form of that race. They are characterized by the upperside having brighter chestnut to the bases of the wings ; paler more extended rufous orange bar up to 6. In the hind wing the orange band is broad, the submarginal black bar much reduced, the upper portion not being more than 4 mm and the remainder of the spots below 5, well separated and decreasing in size. On the underside, it is interesting to note that the Imatong example is devoid of silvery lines and bars, thus analagous to the form *nzoia* of *eudoxus amaurus* but simulating *lucretius* to an even greater extent. It should be noted that amongst the dozens of *mechowi* I have examined, none are without silvery lines below. The specimen from Arua is fully marked with silver lines on the underside.

SYSTEMATIC LIST

Charaxes richelmanni Röber

Charaxes richelmanni Röber, 1936. Type locality : ' Kamerun '.

Range : Cameroon, Central African Republic, Moyen Congo, Upper Congo at Medje in the Ituri area.

Charaxes eudoxus Drury

Charaxes eudoxus eudoxus Drury, 1782. Type locality : Sierra Leone.

Range : Sierra Leone, Gold Coast, Ivory Coast ; thus not crossing the Togo-Dahomey Divide.

eudoxus mechowi Rothschild, 1899. Type locality : N. Angola.

Range : Area 1 ; northern Angola, Kasai and western Katanga, Moyen Congo, Central African Republic, Cameroons & E. Nigeria.

Area 2 ; Congo, east of the Congo River to Ituri and Semliki Valley ; S.W. Sudan.

Area 3 ; Uganda : Kigezi Province, Kayonza forests along the Ishasha River. (Note that this area abuts on the Ruanda-Urundi-Kivu areas.) ?Kigoma, N.E. shore of Lake Tanganyika.

eudoxus theresae Le Cerf, 1932. Type locality : Kitumbo, Lake Kivu, E. Congo.

Range : the western shores of Lake Kivu.

eudoxus katerae Carpenter, 1937. Type locality, Katera Forest, Budu, western shore of Lake Victoria.

Range : Uganda, western shore of Lake Victoria, Budu area in the Katera and Malabigambo Forests.

eudoxus cabacus Jordan, 1925. Type locality : Entebbe, Uganda.
Range : Forests around Entebbe ; Zika, Kisubi ; ? Mabira Forest.

eudoxus amaurus Poulton, 1929. Type locality : Trans Nzoia, S.E. Elgon, Nandi Hills, Tiriki, Kakamega, Kaimosi, all east of the Nile in N.W. Kenya.

eudoxus amaurus f. *nzoia* forma n. Type locality : N.W. Kenya, Kitale.
Range : Timki Hills, Kakamega, Nandi, TransNzoia, in S.E. Elgon area, Kitale.

eudoxus zambiae ssp. n.
Range : Zambia, Shiwa Ngandu, nr Danger Hill, east side of Upper Loangwe Valley.

ACKNOWLEDGEMENTS

I wish to record my grateful thanks to all those who have contributed toward the completion of Part VI of my Revisional Notes on African *Charaxes*, especially the following :

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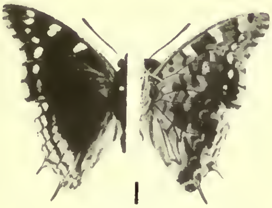
PLATE 1

Charaxes

Figs 1 & 2.	*guderiana guderiana* Dewitz, ♂ and ♀ (Zambia and W. Tanzania), upper and undersides.
Figs 3 & 4.	*g. rabaiensis* Poulton, ♂ and ♀ (Kenya coastal belt, Shimba and Rabai Hills), upper and undersides.
Figs 5–8.	*opinatus* Heron, 3 ♂ variations and 1 ♀ (Uganda : Kigezi, Mafuga), upper and undersides.
Figs 9 & 10.	*blanda blanda* Rothschild, ♂ Type (Tanzania : Mikindani), upper and underside. Photo B.M.(N.H.) No. 38827.
Figs 11 & 12.	*b. kenyae* Poulton, ♂ and ♀ (Kenya : Rabai and Arabuko-Sekke Forest), upper and undersides.
Figs 13 & 14.	*achaemenes achaemenes* Felder, ♂ and ♀ (S. Rhodesia), upper and undersides.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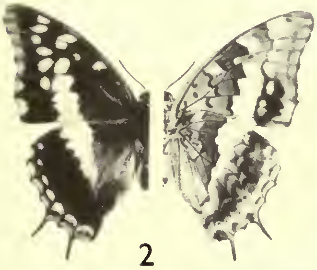
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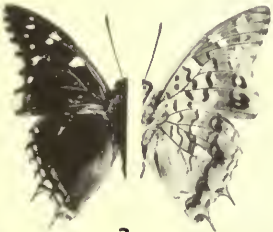
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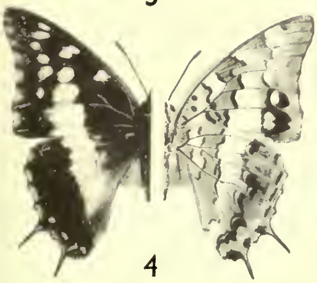
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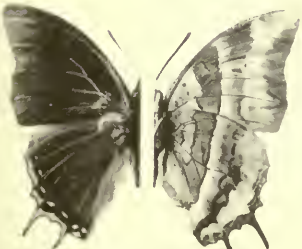
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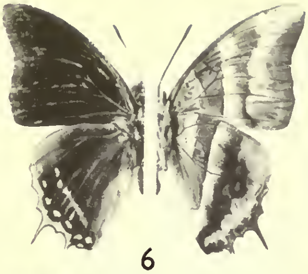
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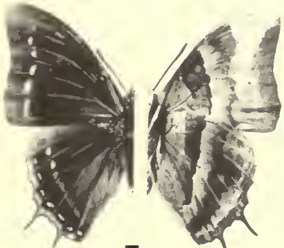
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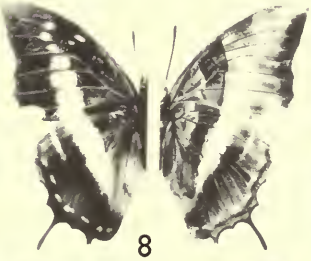
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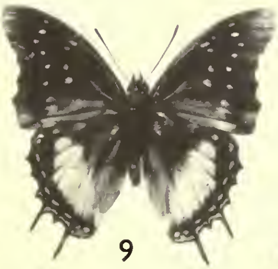
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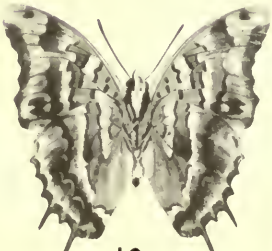
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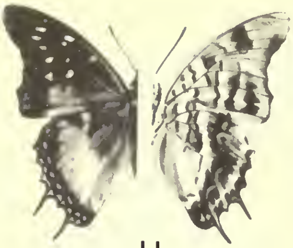
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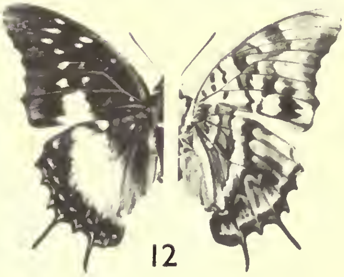
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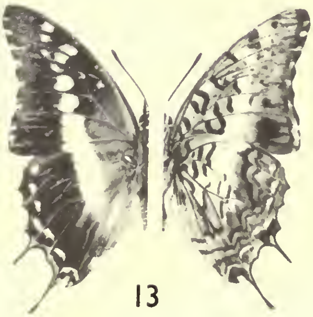
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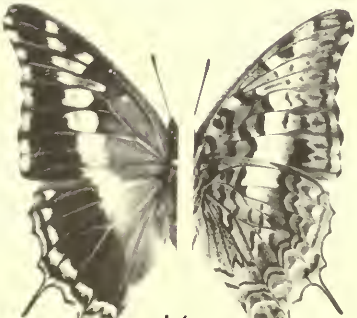
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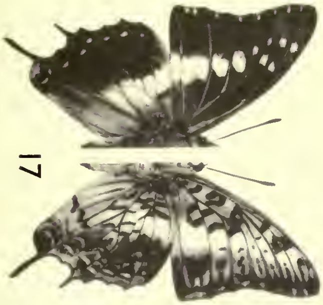
PLATE 2

Charaxes

Figs 15 & 16.	*achaemenes* f. or var. *fasciatus* Suffert, ♂ and ♀ (E. Tanzania and Southern Province), upper and undersides.
Figs 17–19.	*a. monticola* Talbot, ♂ and 2 ♀ (Uganda : W. Nile Province, W. Madi, Metu), 17, ♂, white bars narrow ; hind wing submarginal white spots small. 18, ♀, form 3, base of fore wing rufous ; upper spots of fore wing bar conjoined. Hind wing bar ochreous ; submarginal spots large, bluish white. 19, ♀, form 2, base of fore wing darker, olive-black. Upper spots of fore wing orange-ochre, rest ochre ; upper part of hind wing bar white ; submarginal spots more restricted, lunate, less bluish. Upper and undersides.
Figs 20 & 21.	*a. atlantica* ssp. n., ♂ and ♀ (Senegal), upper and undersides.
Fig. 22.	*a.* form *erythraea* Storace, ♂ Type (N. Ethiopia : near Asmara), upperside.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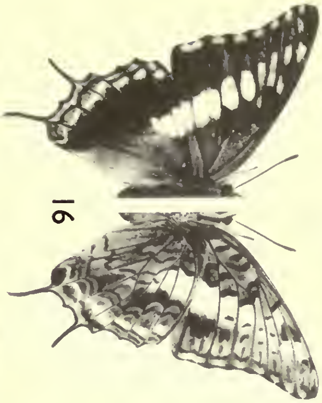
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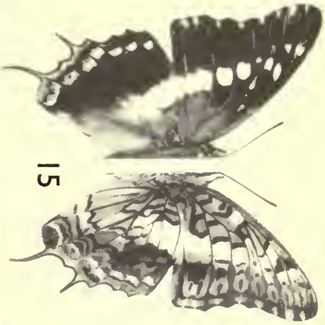
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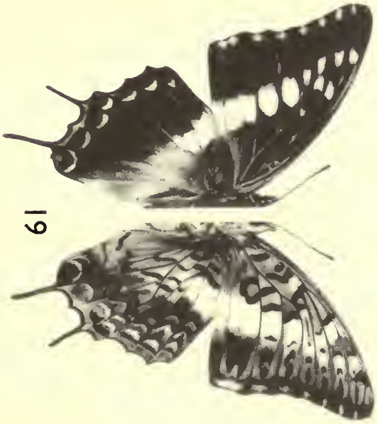
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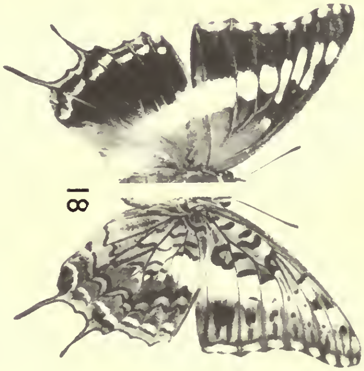
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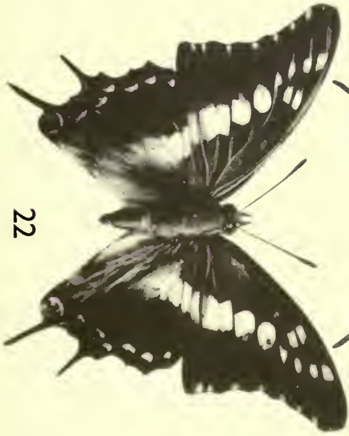
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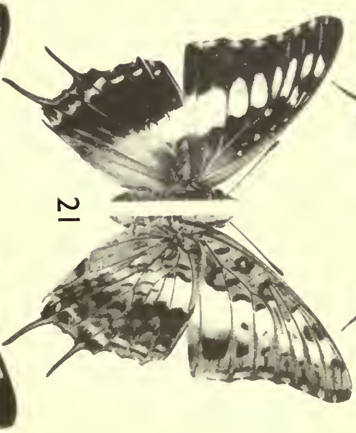
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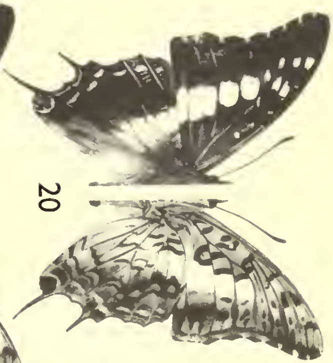
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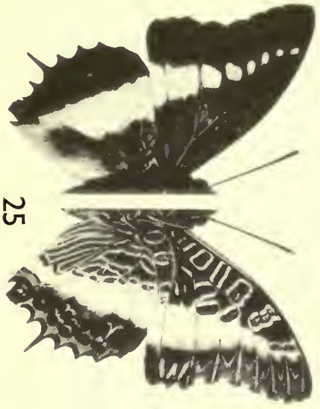
PLATE 3

Charaxes

Figs 23 & 24.	*phoebus* Butler, ♂ and ♀ (Ethiopia : Adole), upper and undersides.
Figs 25 & 26.	*brutus brutus* Cramer, ♂ and ♀ (Sierra Leone and Senegal), upper and undersides.
Figs 27–30.	27 & 28, *b. angustus* Rothschild, ♂ and ♀ (W. Uganda : Semliki Valley, Bwamba) and 2 ♂ (Moyen Congo). 29, basal area fore wing interspaces silvery white. 30, basal area to distal bar and marginal border melanistic ; hind wing basal area to discal bar silvery white. Upper and undersides.
Fig. 31.	*b. junius* Oberthür, ♂ (N.W. Ethiopia : Shoa, Faleklek, Sciotalit, [Antinori]), upper and underside.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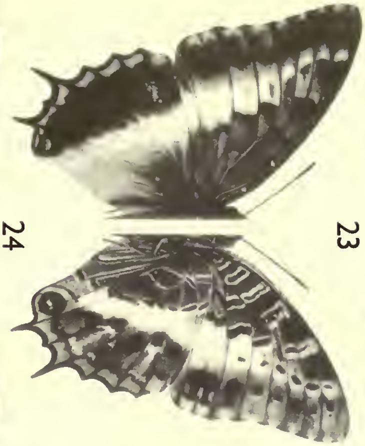
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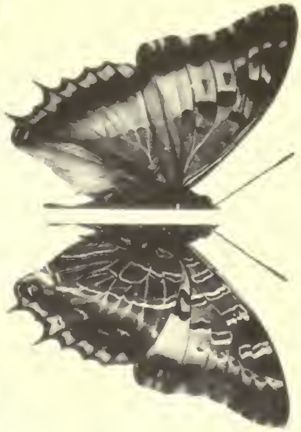
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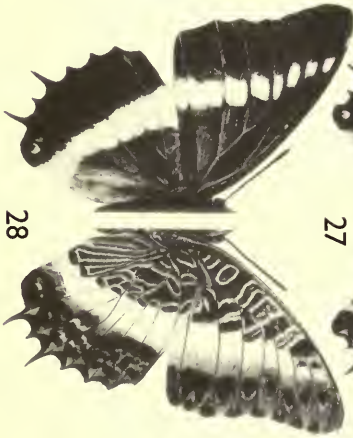
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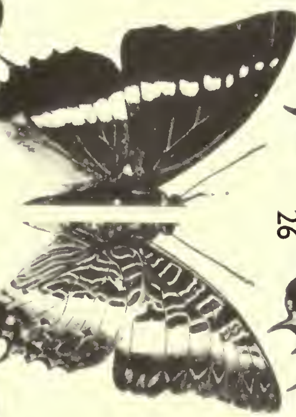
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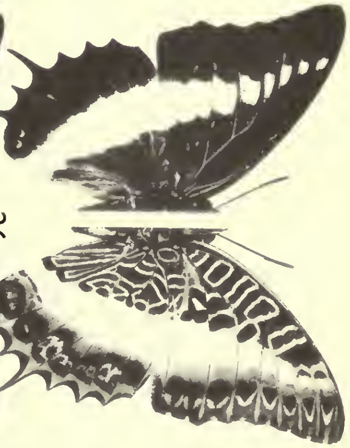
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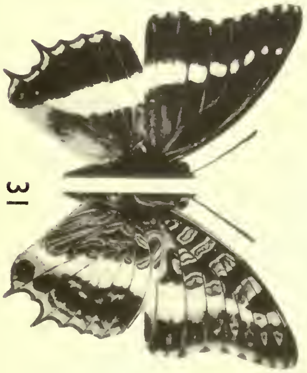
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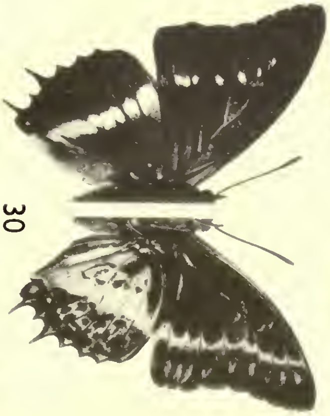
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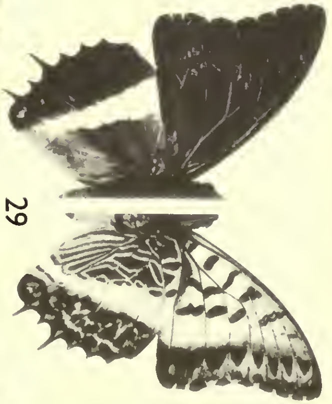
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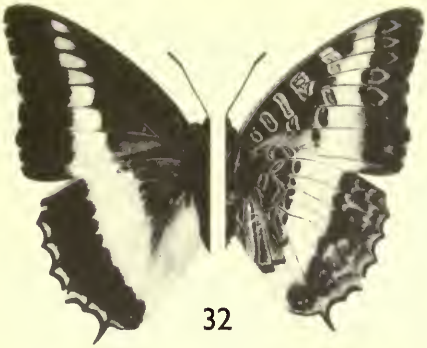
PLATE 4

Charaxes

Fig. 32.	*brutus junius* Oberthür, ♀ (N.W. Ethiopia : Shoa, Faleklek, Sciotalit), upper and underside.
Fig. 33.	*b. somalicus* Rothschild, ♂ (S. Ethiopia), upper and underside.
Figs 34 & 35.	*b. alcyone* Stoneham, ♂ and ♀ Types (Kenya : Dida, north of Mombasa), upper and undersides.
Figs 36 & 37.	*b. natalensis* Staudinger and Schatz, ♂ and ♀ (South Africa : Natal, Durban), upper and undersides.
Figs 38 & 39.	*b. antiquus* Joicey and Talbot, ♂ and ♀ (São Tomé), upper and undersides.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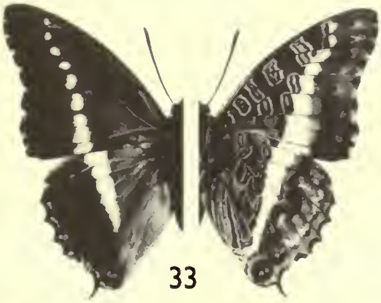
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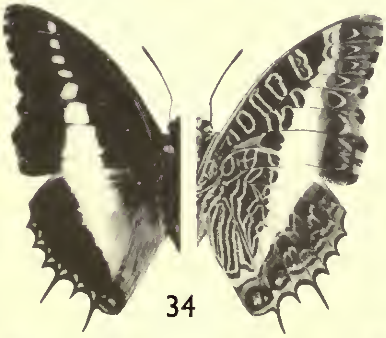
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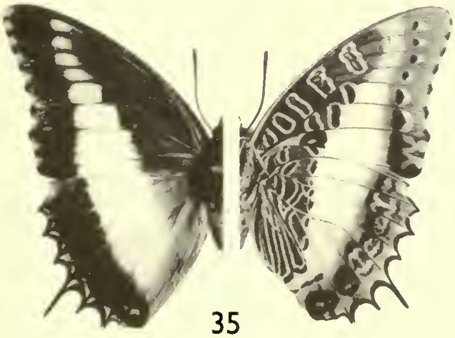
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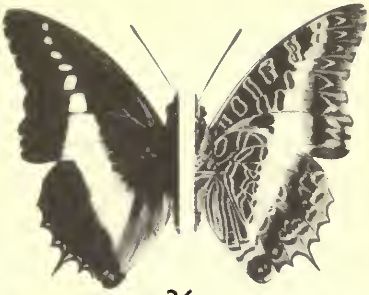
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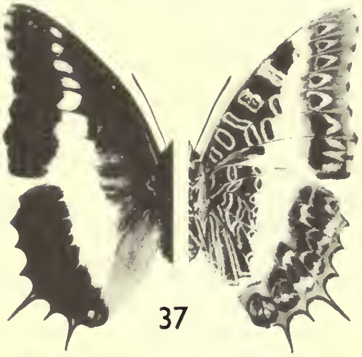
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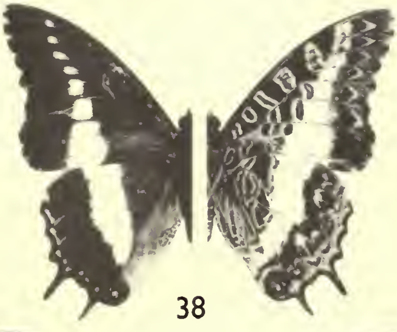
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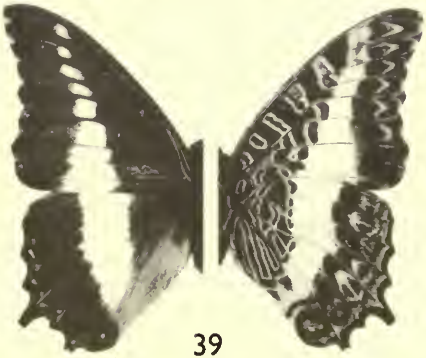
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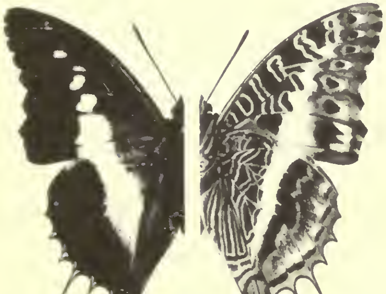
PLATE 5

Charaxes

FIGS 40–42. *andara* Ward, ♂ and 2 ♀ (Madagascar), small forms, upper and undersides.

FIGS 43–48. *boueti boueti* Feisthamel, ♂ and ♀ Types (Sierra Leone.). In B.M.(N.H.). ♂ pale form (Portuguese Guinea : Bissoran) and ♀ (Sierra Leone : Freetown) respectively, upper and undersides. Photos B.M.(N.H.) Nos. 43250–1 and 43246–7.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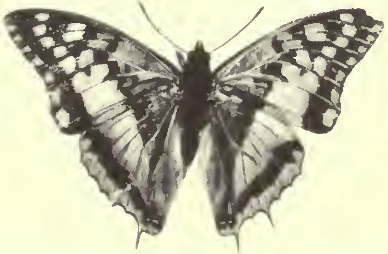
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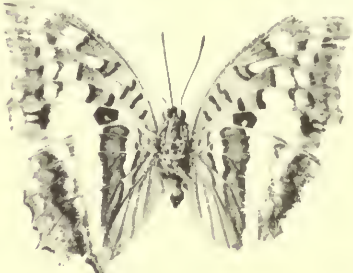
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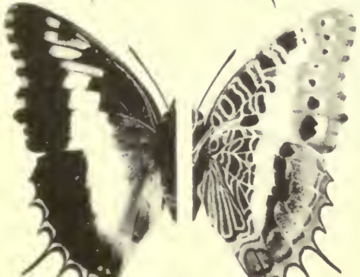
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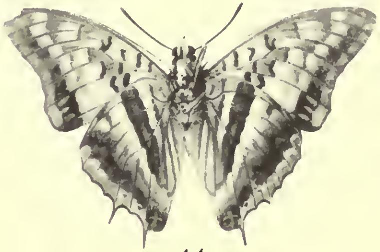
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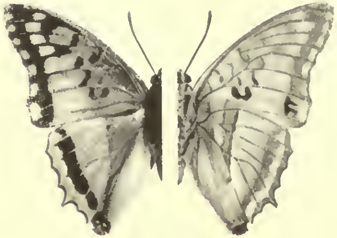
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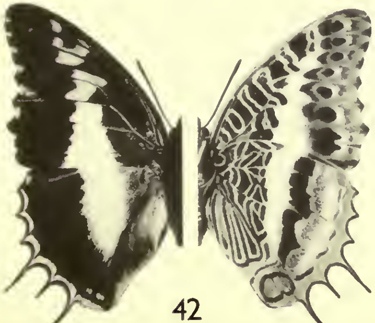
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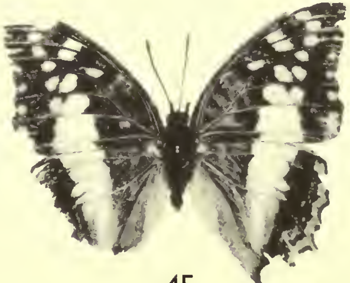
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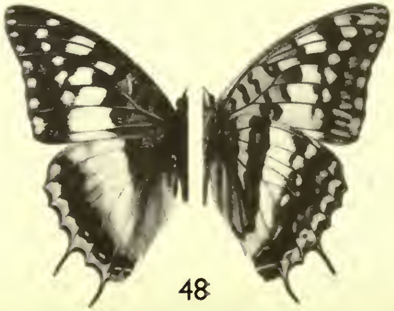
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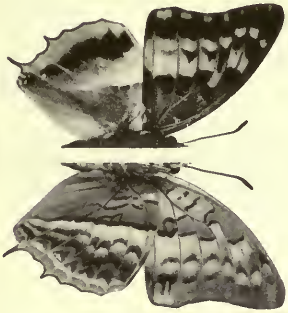
PLATE 6

Charaxes

Figs 49 & 50.	*boueti ghanaensis* Rousseau-Decelle and Johnson, ♂ and ♀ (Togo-Ghana border), upper and undersides.
Figs 51–53.	*b. macclounii* Butler, ♂ dark form (Tanzania: Njombe), ♂ pale form (W. Tanzania: Mpanda dist.) and ♀ intermediate form (Tanzania : Njombe) respectively. Upper and undersides.
Figs 54 & 55.	*b. rectans* Rothschild and Jordan, ♂ dark form and ♀ (N.W. Uganda : Metu Hills, W. Madi), upper and undersides.
Figs 56–58.	*b. alticola* Grünberg, ♂ light, ♂ dark and ♀ dark forms respectively (S.W. Uganda : Kigezi, Kanaba Gap), upper and undersides.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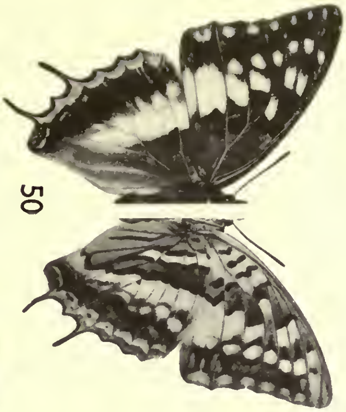
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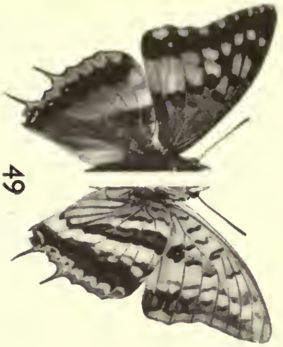
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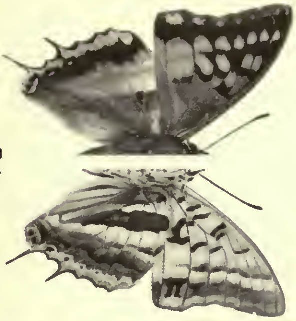
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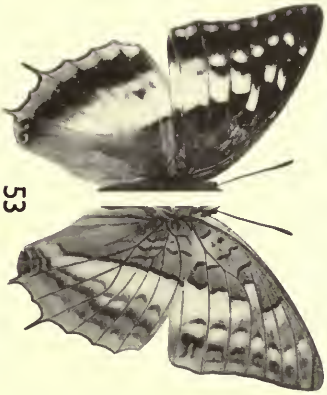
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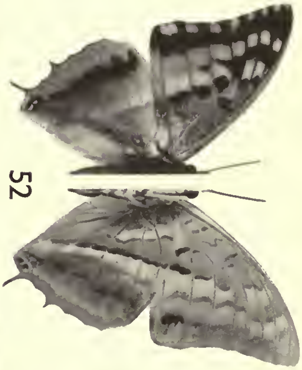
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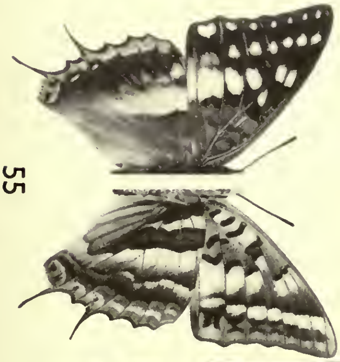
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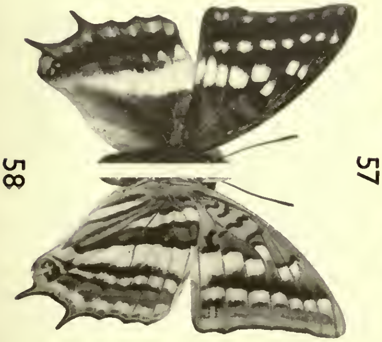
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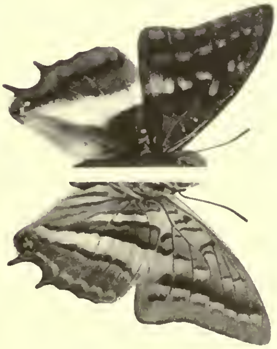
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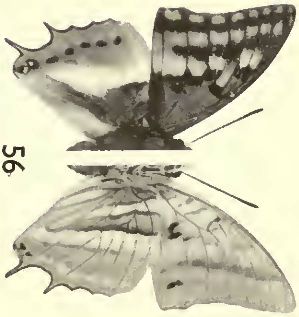
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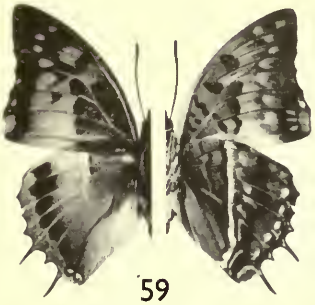
PLATE 7

Charaxes

FIGS 59–63.	*lasti* Grose Smith, ♂ dark form (Tanzania : Usambara Mts.), ♂ intermediate form (Kenya : Shimba Hills), ♂ light form (Usambara), ♀ intermediate form (Usambara) and ♀ dark form (Kenya : Ribbe Forest) respectively. Upper and undersides.
FIGS 64 & 65.	*lasti* Grose Smith, ♀ Type of *Charaxes centralis* Neustetter. Said to have come from ' French Congo ', it is undoubtedly an example of a slightly marked ♀ *lasti*. Upper and underside. Photos B.M.(N.H.) Nos 42561–2.
FIG. 66.	*reichelmanni* Röber (*fallax* auctt.), ♂ (Congo : Medje and Cameroon), upper and underside.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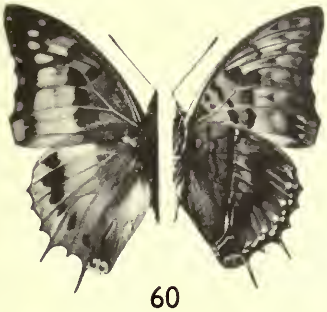
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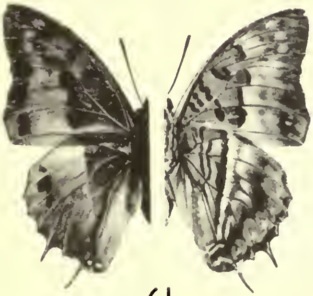
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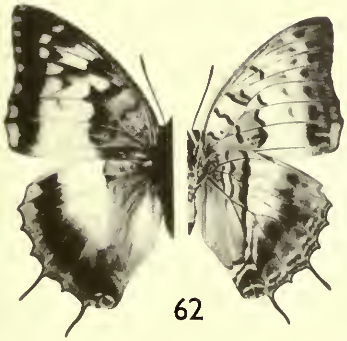
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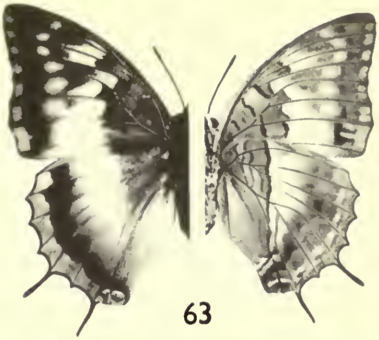
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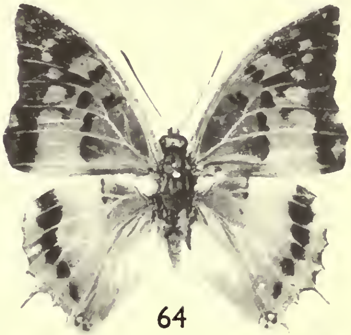
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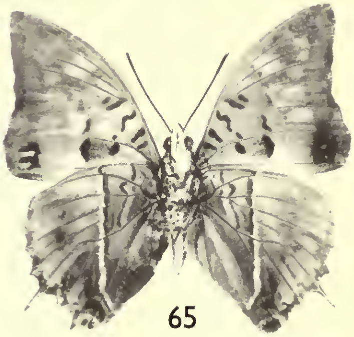
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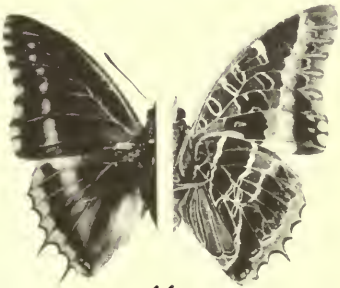
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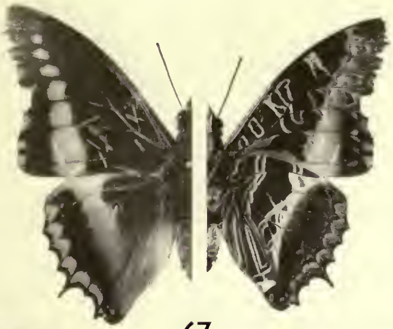
PLATE 8

Charaxes

Figs 67 & 68.	*eudoxus eudoxus* Drury, ♂ and ♀ (Sierra Leone), upper and undersides.
Figs 69–74.	*e. mechowi* Rothschild, 4 ♂ (Uganda : Kigezi district, Kayonza), 1 ♂ (S. Congo : Katanga, Kashimuna), 1 ♀ (S. Congo : Katanga, Kafakumba) respectively. Upper and undersides.



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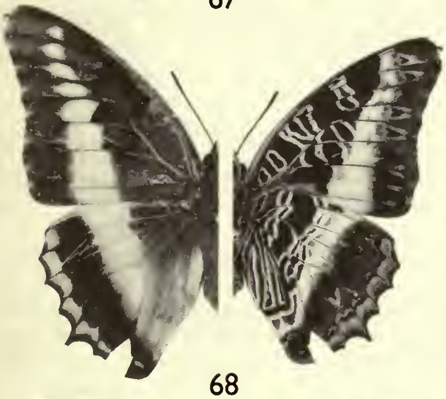

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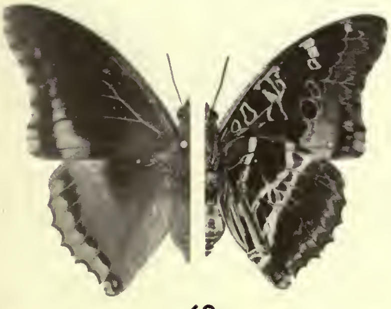

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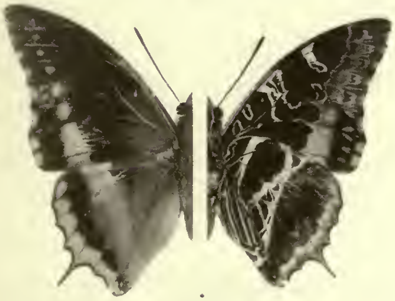

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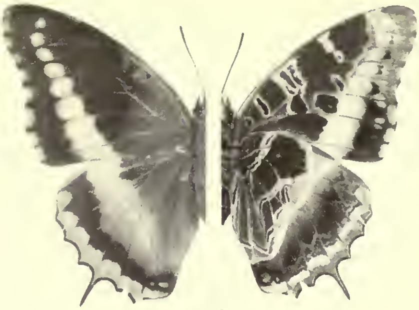

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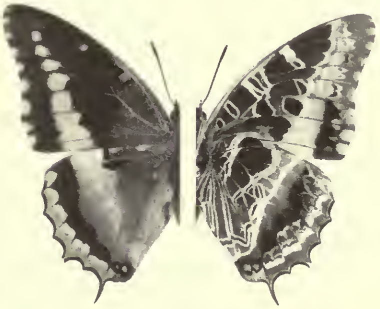

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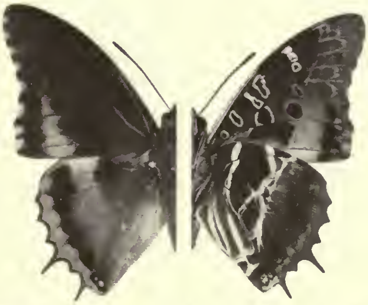

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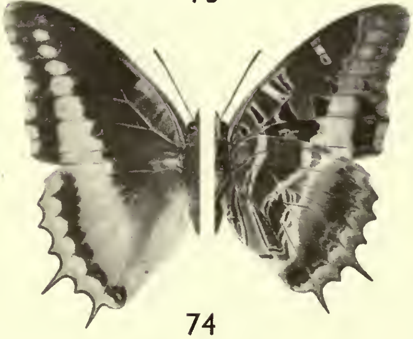

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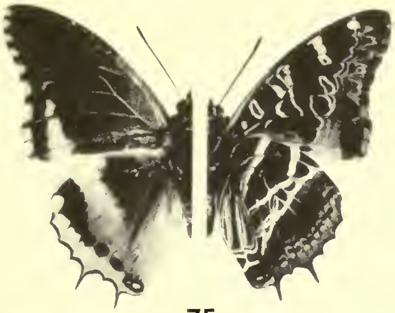
PLATE 9

Charaxes eudoxus Drury

FIGS 75–77.	*mechowi* Rothschild, ♂♂ illustrating variation in this race within the Moyen Congo. Upper and undersides.
FIG. 78.	*theresae* Le Cerf, ♂ (E. Congo : Lake Kivu area, Kitembo), upper and underside.
FIGS 79–82.	*katerae* Carpenter, ♂ and ♀ atypical, with underside pattern suppressed as in ssp. *amaurus* Poulton, ♂ and ♀ specimens with strongly marked undersides, (all Uganda : Masaka District, Katera Forest, Sango Bay), upper and undersides.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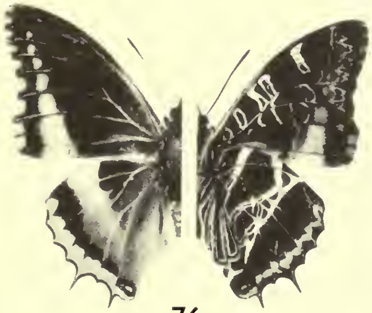
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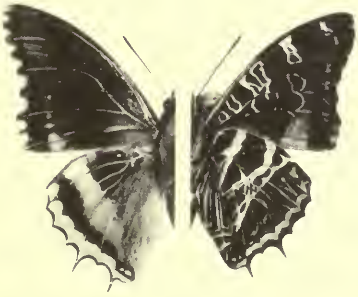
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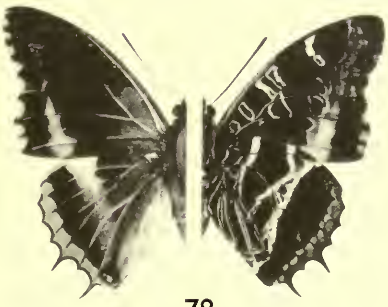
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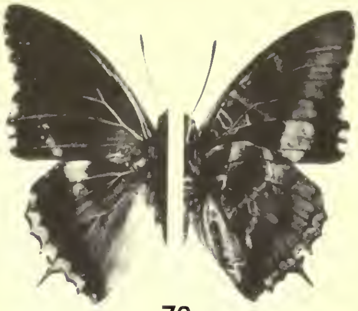
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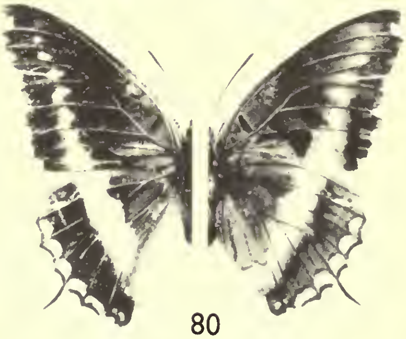
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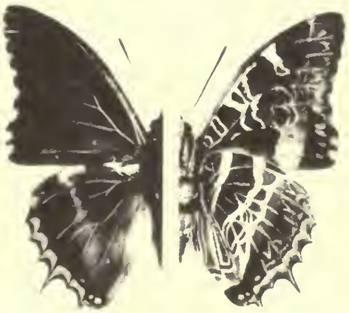
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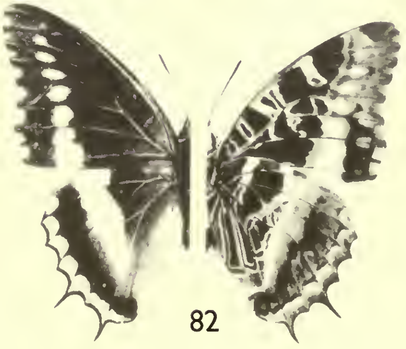
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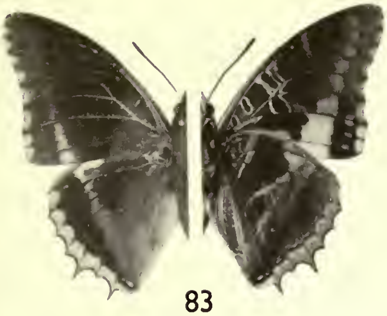
PLATE 10

Charaxes eudoxus Drury

Figs 83 & 84.	*cabacus* Jordan, ♂, topotypical, showing partial suppression of underside pattern, and ♂ Type (both Uganda : Forests adjacent to Entebbe), upper and undersides. Photos B.M.(N.H.) Nos 43248–9.
Figs 85 & 86.	*amaurus* Poulton, ♂ and ♀, topotypical, showing suppression of silvery pattern on underside. (Kenya : Mt Elgon, Kitale), upper and undersides.
Figs 87 & 88.	*amaurus* f. *nzoia* forma nov., ♂ and ♀ Types, undersides with strong silvery pattern. (Kenya : Mt. Elgon, Kitale), upper and undersides.
Fig. 89.	*zambiae* ssp. n., ♂ Type (Zambia : Shiwa Ngandu, Upper Loangwe Valley), upper and underside.



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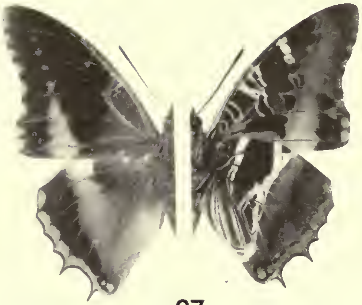

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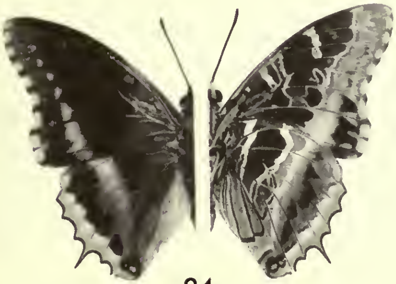

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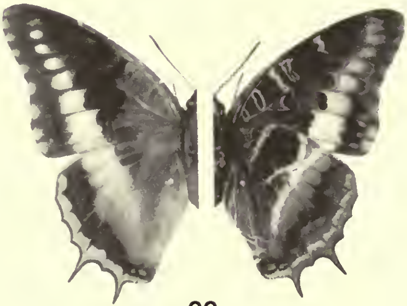

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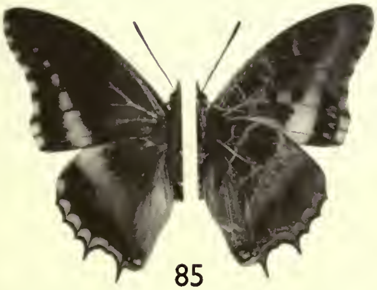

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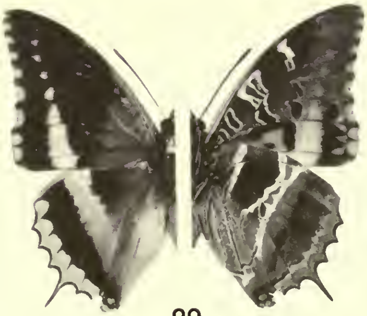

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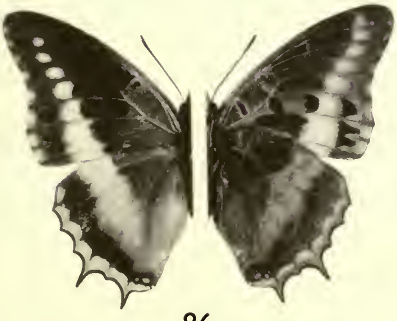

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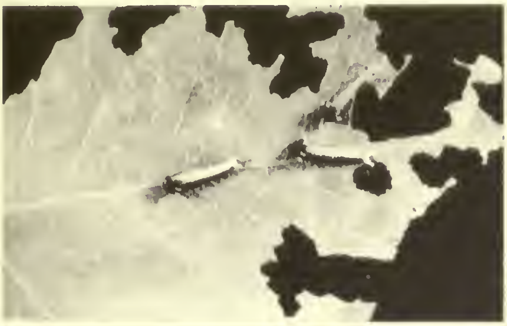
PLATE 11

Larvae and pupae of *Charaxes lasti* Grose-Smith

Figs 90–95.	90. Larvae, first instar. 91. Larva, second instar. 92. Larva, third instar. 93. Larva, fourth instar. 94. Larva, fourth instar, another with only diamond-shaped mark on dorsum of 6th somite. 95. Larva, fifth instar.
Figs 96 & 97.	Pupae.



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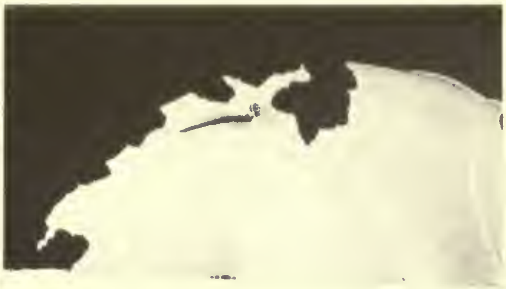

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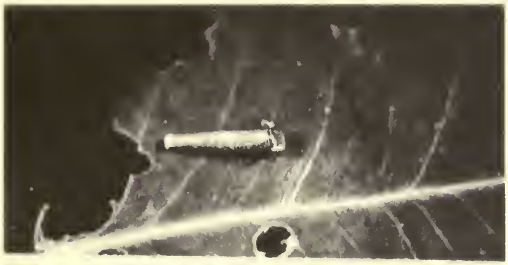

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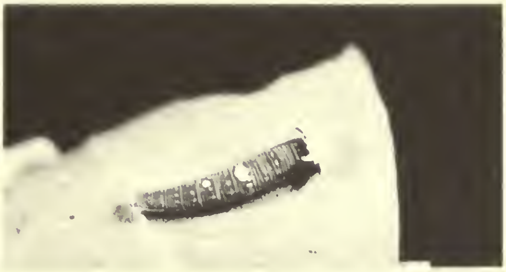

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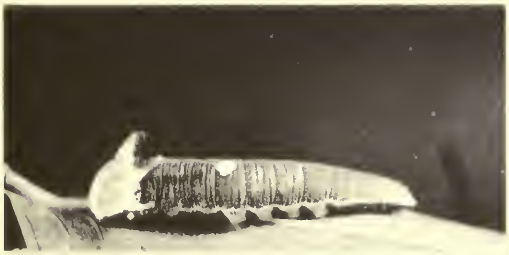

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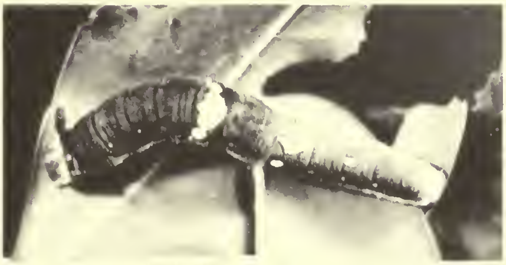

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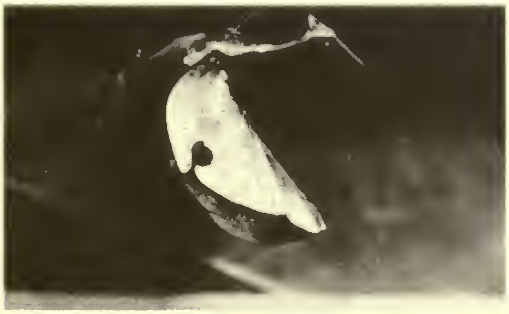

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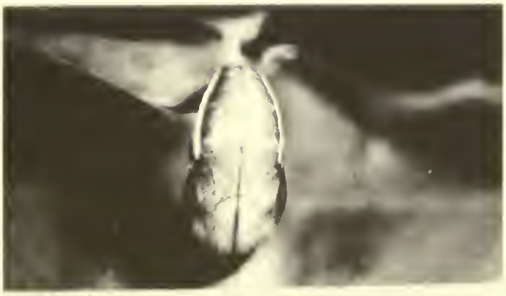

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BRITISH MUSEUM
4 MAR 1971
NATURAL HISTORY

R. W. CROSSKEY

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ENTOMOLOGY Vol. 25 No. 6
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BY

ROGER WARD CROSSKEY
Commonwealth Institute of Entomology

Pp. 251–305; 1 *Plate*

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THE TYPE-MATERIAL OF AUSTRALASIAN, ORIENTAL AND ETHIOPIAN TACHINIDAE (DIPTERA) DESCRIBED BY MACQUART AND BIGOT

By R. W. CROSSKEY

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SYNOPSIS

Alphabetical catalogues are given of the 168 nominal species of Tachinidae described from the Old World (exclusive of Palaearctic Region) by J. Macquart and J. M. F. Bigot, with an account of all located type-material on which the names are based. Thirty-nine lectotypes are newly designated. The few relevant nomina nuda published by Macquart and Bigot are included, together with those nominal species recorded from the area covered but now known either not to be Tachinidae or to have come from other regions.

INTRODUCTION

THE development of Tachinid taxonomy from the alpha to the beta stages (as Mayr, 1969, defines these), and the preparation of synthesizing revisionary works which this will necessitate, is much hampered by the multiplicity of names involved and the lack of catalogues bringing these together (even on a regional basis). From the Australasian, Oriental and Ethiopian Regions together slightly more than 700 genus-group segregates and 2,400 nominal species-group segregates have been described, but undoubtedly there is much synonymy of generic and specific names, and systematic catalogues are needed for the Tachinidae of each of these zoogeographical regions which will render some order out of the present chaos. The preparation of such catalogues is currently in hand (Crosskey, in preparation), but depends entirely on detailed study of the large numbers of types involved, for in a family such as the Tachinidae—where nomenclatural confusion has reached almost classic proportions—it is vital to see as many as possible of the types in order to get the nominal species assigned correctly to recognizable generic and tribal concepts, and more especially to study the types of the older authors which have too often been neglected (and their nominal species, as a consequence, often wildly misinterpreted).

Although a few earlier authors (particularly Wiedemann and Robineau-Desvoidy) had described some Tachinidae from the exotic and mainly tropical regions of the Old World, it was Macquart between the years 1835 and 1855 who first described a really significant number of forms and to whom so many of the names of Palaeotropical genera and species date back in priority. Consequently the types of Macquart have an almost unique importance for the taxonomy of non-European Tachinidae, and an account of his type-material of Australasian, Oriental and Ethiopian Tachinidae is therefore here presented in advance of the projected regional catalogues. Bigot's work, though very extensive on the New World Tachinidae, is of minor significance in the Old World fauna, but as many of Macquart's nominal species were based upon specimens he received from Bigot's collection—and as Bigot was an immediate and important successor to Macquart as a describer of exotic Tachinidae—I have considered it natural to take account of Bigot's type-material in the same paper as that of Macquart's. There is much need of a similar paper to the present one which would deal with Macquart's and Bigot's types of Tachinidae from the Western Hemisphere (for Bigot, especially, described many species from the Neotropical Region), but preparation of papers of this kind is laborious and time-consuming, and I shall be unable to undertake such a paper myself in the foreseeable future ; it is hoped, however, that a North American specialist on the Tachinidae will be able to prepare such a companion paper.

I have presented this paper in two parts, the first dealing with the nominal species described by Macquart, and the second part with those described by Bigot. The alphabetical lists include not only the available species-group names, but also (for completeness) the very few *nomina nuda* which Macquart and Bigot published. Included, too, in square brackets, are the names of those nominal species which Macquart and Bigot assigned to apparently Tachinid genera, but which are now known to belong to taxa in other families, and also the few Tachinid nominal species which though described from the area covered are now known to have a New World provenance.

All names given in Parts I and II are listed alphabetically in their original combinations, and for each taxon the entry is arranged to show the following information in the sequence indicated:—

Name ; author ; date and page reference of original publication ; status and sex of primary type ; authority for lectotype designation (if relevant) ; data of primary type ; type-depository.

Number and sex of paralectotypes (if any), with data and despository.

Explanatory comments and annotations.

The following points should be noted with regard to the foregoing sequence-list of type-information. In a few instances the type-material is lost or has not been accessible, and in the absence of definite information about the number of original specimens it has sometimes been necessary to cite the types as " ? holotype or syntypes ". Most of the lectotype fixations are new, as indicated by the words "LECTOTYPE" and "by present designation", and a total of 39 lectotypes are newly designated in the paper. The type-data usually amounts to no more than the name of the country or island-group of origin, but if anything more precise is known then the additional information is given : e.g. "AUSTRALIA" if there is no further information, but "QUEENSLAND, Moreton Bay" if the further detail is possible. In a few instances the name of the collector of the type-material is known, and where so this is cited in parentheses and italics after the locality, e.g. "INDIA, Pondicherry (*Perrottet*)". I have often thought it helpful, after citing the type-locality in its modern form, to show between single inverted commas and in parentheses the name of the locality actually cited in the original publication, e.g. "AUSTRALIA ('Nouvelle-Hollande, côte orientale')". If the provenance cited in the original publication appears to be in error, but cannot be proved to be so, then I have indicated this by giving the cited locality in single inverted commas followed by an annotation in square brackets, e.g. " 'TASMANIE' [probably in error for New South Wales]".

Almost all of Macquart's type-material is in Paris and London, and all of Bigot's type-material (of Tachinidae) is in London. The Macquart types now in London, and Bigot's own types, formerly were part of Bigot's collection, and though they are now incorporated into the general Diptera collection of the British Museum (Natural History) I have thought it best to indicate that they came from Bigot's collection by adding "(ex coll. Bigot)" after the type-depository. In the case of Macquart's types in Paris I have indicated the serial reference numbers after the type-depository initials. To condense the text the following abbreviations have been used for the type-depositories :

BMNH	British Museum (Natural History), London.
MHN	Musée d'Histoire Naturelle, Lille.
MNHN	Muséum National d'Histoire Naturelle, Paris.

Townsend saw some of Macquart's types in Paris, and apparently some of Bigot's types when the Bigot collection was formerly in the hands of J. E. Collin at Newmarket (see p. 296), and some of these—together with others he had not seen—he referred to in his *Manual of Myiology* (1934–1942, 12 Parts, Itaquaquecetuba), and occasionally in his earlier papers. Unfortunately, several of the specimens referred to by Townsend as "Ht" [= holotype] for various nominal species of Macquart and Bigot are not original type-material at all, while some others are specimens arbitrarily referred to by Townsend as "holotypes" though actually only specimens from syntypic series. In a few cases it happens, however, that Townsend's citation of "Ht" can apply only to one recognizable specimen of the type-series of a particular nominal species and I have then reluctantly accepted Townsend's action as valid fixation of a lectotype (for it provides a restriction of the name to one specimen, even though such specimen was not labelled by Townsend to show its status). All cases of this kind, and others where Townsend's citations of types were based on faulty recognition of type-material, have been annotated throughout the text.

Lectotypes fixed by Townsend and lectotypes newly designated in the present paper have been appropriately labelled, and all available paralectotypes have also been labelled to show their status.

Finally, it should be explained that this paper deals only with the type-material of the nominal species discussed, and no attempt has been made to assign the species to currently recognized genera or to investigate possible synonymies ; this will be done when the projected regional catalogues are published.

ACKNOWLEDGEMENTS

It gives me much pleasure to thank Monsieur L. Matile and Dr L. Tsacas for their generous help during my visit to the Muséum National d'Histoire Naturelle in Paris in September 1969, and to thank Mrs M. E. Crosskey for her invaluable help in taking down copious notes on Macquart's types during this visit.

I am grateful also to Professor R. Defretin, Conservateur of the Musée d'Histoire Naturelle at Lille, for information on specimens in Macquart's collection in that Museum and to Dr Curtis Sabrosky for information on some relevant specimens in the U.S. National Museum, Washington, D.C. For valuable information in reply to enquiries I am much indebted to Monsieur Matile and Dr J. Verbeke.

PART I—MACQUART

MACQUART'S WORK AND RECOGNITION OF HIS TYPE-MATERIAL

Justin Macquart was born at Hazebrouck (Département du Nord) in northern France in 1778 and died on the 25th November 1855 at Lille, where he had been prominent among the savants for more than fifty years. In 1803, at the age of twenty-five, he was a founder-member of the *Société d'Amateurs des Sciences et Arts de la ville de Lille*, which was later renamed the *Société des Sciences, d'Agriculture et des Arts de Lille*, and in later years he held various offices in this Society including the Presidency ; many of his major works, and virtually all of those concerned with exotic Diptera, were published in the *Mémoires* of the Society. Macquart was largely responsible for the creation of the Musée d'Histoire Naturelle in Lille, of which he was director for many years and where he built up an important insect collection (which was later largely destroyed through neglect). It seems quite certain that Macquart was held in much esteem during his lifetime, most especially among his scientific confrères in Lille, and it is interesting to read the honorific address that was presented to Macquart on the 17th July 1853 to mark the fiftieth anniversary ("jubilé académique") of his entry into the Lille Society (see p. 6 of the *Supplément à l'année 1853 et table générale de la Ire série*, Lille, 1856, published as a separately paginated supplement to the *Mémoires de la Société impériale des Sciences, de l'Agriculture et des Arts de Lille*, Année 1853). An obituary notice of Macquart by the president of the Lille Society can be found in the *Mém. Soc. Sci. Agric. Lille* Sér. II, **3** (1856) : 469, published in 1857.

Before considering Macquart's works some brief mention must be made of discrepancies which exist in the literature concerning Macquart's Christian names (prénoms). Some standard bibliographical and entomological sources cite Macquart's first name as Jean, others as Justin, and others as Pierre-Justin-Marie ; Macquart himself always published only the initial 'J'. Different editions of the French Larousse encyclopaedia cite different names : in the 1873 edition (*"Grand Dictionnaire universel du XIXe siècle"* **10** : 880) the names Pierre-Justin-Marie are given, but in the 1933 edition (*"Larousse du XXe siècle"* **4** : 581) only the prénom Jean is given. I have no completely conclusive evidence about which is correct, and have found no certain explanation for the discrepancies, but I have here accepted as probably correct (and have cited above) the prénom Justin : this is the single name cited by friends and colleagues of Macquart in the *Mémoires* of the Lille Society (mentioned above), and is given for example in the obituary notice of Macquart already mentioned and in a bibliography of Macquart's works published in 1856 (the year after his death) (see pp. 67–68 in the *Supplément à l'année et 1853 table générale de la Ire série* to the *Mém. Soc. imp. Sci. Agric. Lille,* Année 1853) ; these may be considered sufficiently authoritative sources, at least for the purpose of this paper.

Macquart's interest in natural history began at a young age, and while travelling with the French armies as a young man he studied the botany and entomology of the countries that he passed through ; later on, he studied particularly the insects of France and Switzerland and visited Meigen in Germany (in 1840 he personally brought Meigen's collection from Stolberg to Paris). Some of Macquart's earliest published work was on the Orthoptera and Hemiptera, and from time to time he published also on Coleoptera, plants and birds, but it was to the Diptera that he devoted most of his later life's work. His early publications on Diptera comprised monographic works on the flies of northern France, but in the later years of his life Macquart devoted himself more and more to a study of the exotic (i.e. non-French) Diptera, of which material was beginning to accumulate in collections in France (especially in the Natural History Museum in Paris) as a result of the French voyages of the first half of the nineteenth century.

The studies made by Macquart on the "exotic" Diptera culminated in the appearance of his great work, published between 1838 and 1855 in two volumes and five supplements, entitled *Diptères exotiques nouveaux ou peu connus* (the volumes and supplemental parts of this are, for convenience, referred to simply as the *Diptères exotiques* and the *Suppléments* in the discussion which follows). This work contains the descriptions, according to Macquart's (1855 : 30) own count, of 2,300 species of exotic Diptera described by Macquart himself, and has therefore always been an extremely important taxonomic text for students of the Diptera, especially of the non-European forms ; it establishes Macquart as one of the most important dipterists of the nineteenth century, and in many ways as the father of extra-European and tropical dipterology.

Before the work of Macquart only Wiedemann and Robineau-Desvoidy had made extensive contributions to descriptive dipterology for the extra-European parts of the world, but the standard of work attained by these earlier workers was in the main significantly lower than that attained by Macquart, and Macquart's work in the *Diptères exotiques* and its *Suppléments* represents a real advance in extra-European dipterology when compared to anything that had gone before. It is perhaps true that Wiedemann's specific descriptions are as a rule superior to Macquart's, and sometimes that Robineau-Desvoidy had a better eye for affinity ; but Wiedemann's work shows a slavish adherence to the European genera recognized by Meigen, into which he pressed many curious exotic forms that were really impossible to fit into the framework of European genera. It is one of Macquart's major contributions that he realized that the baffling welter of newly discovered forms coming from the tropics or Australia or South America simply could not be fitted into European genera, or only occasionally could, and that he described many new genera to accommodate them ; today we treat as valid the majority of the genera which Macquart established.

It is easy to fault the *Diptères exotiques* and *Suppléments* on the grounds (relatively rather trivial) that in this work Macquart several times described the same species so that some of his own names are synonyms, or that he occasionally published a name for a new species that is a junior primary homonym of one of his own names. But it is far more important to remember that the work contains standards of taxonomic presentation well above those that had normally obtained in dipterology before his time, and often far higher than that of his contemporaries (e.g. Walker) and many of his later successors (e.g. Bigot or Curran) : even a casual acquaintance with the work shows that in it Macquart provided, for example, keys to all tribes and genera, and diagnoses of all tribes and genera, in a style that would be creditable in modern taxonomy ; furthermore, Macquart, to the best of my knowledge, was the first dipterist who clearly labelled his original specimens of a new species and new genus with "n.sp." or "n.g." suffixed to the names, and this is a striking advance on the very imprecise and casual labelling (or indeed total lack of labelling) that had often characterized the work of earlier dipterists (Macquart's labelling of specimens is considered in more detail later in this section).

Each volume and *Supplément* of the *Diptères exotiques* is copiously illustrated with figures of whole flies and such parts as heads and wings which Macquart drew himself, and the extensiveness of the illustration is another feature of Macquart's work which makes it outstanding for its time. It is true that the figures have a crude look about them to a modern taxonomist's eye, but it has to be borne in mind by anyone inclined to criticize these figures that they were delineated by an elderly or old man (Macquart was 60 years old when the first volume of *Diptères exotiques* was published and 77 years old when the last (fifth) *Supplément* appeared in the year of his death), and that the figures of entire flies with outstretched wings had almost all to be mock-up drawings because few of the actual specimens were set in the postures shown: among the Tachinidae, for instance, of which many were illustrated by Macquart, only some specimens of Rutiliini are actually set with outstretched wings and legs. Despite the rather unnatural appearance of Macquart's figures it is possible to recognize some of the species accurately or to get a shrewd idea of what species Macquart had before him, and when the figures are compared against the types it is the fair degree of accuracy that impresses one (bearing in mind the conditions of the times)—though undoubtedly the few figures which Wiedemann provided before Macquart's work look more like real flies. In the main we should be appreciative of the very large number of figures which Macquart provided rather than critical of their blemishes.

Most of Macquart's nominal species were described from specimens in the collection of the Muséum National d'Histoire Naturelle in Paris or from the collection of Bigot, and the great majority of the original types still exist in the Paris Museum or (in the case of those from Bigot's collection) in the British Museum (Natural History) in London and the Hope Department of Entomology in the University Museum at Oxford. Many of the original specimens are still in good or fair condition, but others (especially in the Paris collection) are in dreadful condition as the result of neglect at one time or another ; undoubtedly Macquart described some species from specimens that were far from perfect at the time of description, but it is equally certain that those types found now to be coated in a brittle deposit or concealed in thick mould must have been in reasonably good condition when Macquart saw them. In addition to describing specimens from the collections of the Paris Museum and of Bigot, Macquart also described some species from specimens that he saw in the collections of other French naturalists, including for example Dejean and Fairmaire, but the types of such species appear never to have been located and must now be considered lost (no Diptera from the collections of Dejean or Fairmaire have been found, so far as I know). There is a possibility that a box of Diptera from Java recently located in the Municipal Museum at Tournai in Belgium contains the original specimens of the Javanese species which Macquart described in the *Suite du 2me Supplément* (commonly called the third Supplement) from material collected by Monsieur Payen, who was administrator of the Museum at Tournai when these species were described : at present, as I have not yet been able to see the material, this is uncertain, and in the text of the present paper where the relevant nominal species are involved the type-material is recorded as "possibly lost". One other collection known to contain Macquart types is that which Macquart formed as a personal collection from specimens given to him and which is now in the Musée d'Histoire Naturelle at Lille, where it had been neglected for many years after Macquart's death or actually mislaid : when found again in 1899, in its original cartons, Macquart's own collection had suffered serious damage from humidity and *Anthrenus* attacks, and many specimens had been badly damaged or completely destroyed ; but the remnants of this collection certainly contain original specimens on which those nominal species are based that Macquart (in *Diptères exotiques* and *Suppléments*) cited as in "Ma collection" or in "Mon cabinet". (Here it may be useful to note that the Diptera section of the Muséum National d'Histoire Naturelle in Paris possesses a manuscript catalogue, prepared by Julien Salmon in 1899, of the Diptera existing in Macquart's own collection in Lille.)

Macquart's types of those species he described from Bigot's collection have been incorporated into the general collection of the British Museum (Natural History) for those families of which the BMNH possesses the Bigot material, but they are left as part of a separate Bigot collection at Oxford for those parts of the Bigot collection possessed by the Hope Department of Entomology. In the Muséum

National d'Histoire Naturelle in Paris the material worked upon and described by Macquart is housed as a "Macquart collection" separate from the general Diptera collection, and is contained in 87 serially numbered hinge-lid glass-topped boxes, with the species serially numbered and arranged together by zoogeographical region ; the different regions are indicated by a colour code shown on the ends of the boxes and on circular accession labels attached to most of the specimens, in which yellow denotes European and Oriental, blue denotes African, mauve-pink denotes Australasian and green denotes American material. The circular labels on the specimens have the colour on one side only, and the plain white side bears figures in faded ink which indicate a serial number given to the collection of which the specimens formed part, followed by the year of accession (last two digits only) ; for example, a circular accession label on a Macquart specimen in the MNHN collection which is mauve-pink on one side and has the figures "13 44" on the other indicates an Australasian specimen of the thirteenth collection registered in the accessions ledger in the year 1844. The accession labels are of great importance for the recognition of the true type-specimens, as discussed further below.

Recognition of the original type-specimens of Macquart's species is normally not difficult, but is complicated by the fact that Macquart often identified specimens that were collected or studied after the time of the original descriptions and added them to the Paris Museum collection so that they stood together with the original (type) specimens ; because of this, it is often the case that not all of the specimens standing in the MNHN collection under a particular name are actually type-specimens, and it is then necessary to distinguish the true types from the later material by taking into account not only the handwritten labels of Macquart but also the accession date labels.

Macquart's handwriting is easily recognized (see Plate 1, A–F). He was extremely punctilious in labelling specimens with both a generic and specific name, and (at least from the time of the first *Supplément*, 1846) at indicating whether the specimen labelled represented a new species or new genus and species. The label for a new species nearly always bears the suffix "n.sp." after the name (Plate 1, B), or occasionally the suffix "nov.sp." (Plate 1, C), and the label for both a new genus and a new species normally has the suffix "n.g., n.sp." after the name (Plate 1, A) ; labels with suffixes of this kind always indicate that the specimens so labelled are types. But from a study of Macquart's material it is evident that up to the time of the second volume of *Diptères exotiques* in 1843 Macquart had not yet formed a consistent habit of adding the suffixes, and most of the types of his species described before 1843 (and some of those described in this year in *Diptères exotiques*, second volume) have labels which show only the generic and specific name ; in these instances, the evidence of type status rests on the finding of specimens bearing Macquart's own name label in conjunction with agreement with description, and other ancillary evidence (e.g. no discrepancy with accession date labels).

Macquart only labelled one specimen of a new nominal species with the name and suffix, though he often had more than one original specimen, and it is often necessary to determine whether some or all of a series of specimens standing under a particular name are syntypes. Macquart himself (unlike his predecessors and contemporaries, and unlike too many of his successors) had seen the need to distinguish clearly the original specimens of a species from those identified later, and many specimens exist in the MNHN and BMNH collections which bear Macquart's determination labels that can be easily distinguished from his labels on original types : later determination labels lack the suffixes but give the binomen and author (see Plate 1, F), and frequently also indicate the *Supplément* in which the species was described and the provenance of the specimen labelled ; for example, a typical later identification label written by Macquart reads "Gonia heterocera ♀ Macq. 1. supp. Tasm.", this indicating that the species was described earlier in the first *Supplément* and that the specimen came from Tasmania ; labels of this kind at once eliminate the specimens so labelled from the type-series. Other specimens, in the MNHN collection, though not bearing later determination labels, can often be eliminated on the evidence from their accession labels : specimens which bear circular accession labels indicating that they were registered as part of the MNHN collection in 1847 (e.g. those with accession number "4 47") are not type-specimens of nominal species described earlier than this date, and it is certain also that no specimens with 1846 registrations (e.g. those with accession number "4 46") were described in that year (i.e. specimens that are types of species described in 1846 in the first *Supplément* always have accession numbers earlier than this year, normally 1844). The accession dates are most helpful in determining the type or non-type status of specimens, because of the close link with the dates of publication of the *Diptères exotiques* and the *Suppléments* : specimens registered in 1844 were not seen by Macquart earlier than this date and cannot therefore be described in *Diptères exotiques*, Volume 2, published in 1843, but are frequently described in the first *Supplément* of 1846 : specimens registered in 1846 and 1847 are not involved in *Suppléments* earlier than 1847 and 1848 respectively, and some were not described until the fourth *Supplément* (1850/1851) or the fifth *Supplément* (1855) ; not all specimens from the 1844 registrations were covered by Macquart in the first *Supplément*, and many of them were not described until later *Suppléments*. The accession year numbers are always indicative of the earliest possible date at which a specimen could have been described, and invaluable for determining syntype status in doubtful cases.

In the present work any specimen standing in the MNHN collection with Macquart's originally-labelled specimen has been accepted as a syntype provided that it agrees with the description and that its accession number makes it eligible for admission as an original specimen. Macquart did not indicate in publication the number of specimens available to him (though in a very few instances it can be deduced from some statement attached to the description) and all specimens that could have been seen by him at the time of description are acceptable as part of the type-series if there is no contrary evidence. The lectotypes designated, and the paralectotypes, have been labelled to show their status. Macquart rarely mistook the sex of his specimens of Tachinidae, but any discrepancies between the published sex and the actual sex of his type-specimens are annotated in the text when relevant.

The majority of Macquart's types that formed part of Bigot's collection are holotypes which are easily recognized as such by bearing Macquart's original name labels, but a few of the species described from Bigot's collection are based on syntypes, though they do not in this case have accession labels from which deductions about status can be made. The syntypic status has to be assumed from the finding of two or more specimens standing together which all answer to the original description and of which one bears Macquart's label. Bigot sometimes removed Macquart's original name labels from the specimens and gummed them on to his own rectangular black-edged card cabinet labels (see Plate 1, E), often adding information on locality and Macquart's authorship in his own handwriting ; he did this especially among the Rutiliini (Tachinidae), and the labels from several of Macquart's Rutiliine primary types are mounted in this way (as in the case of *Rutilia fulgida* shown in Plate 1, E).

Macquart nearly always recorded in the *Diptères exotiques* and *Suppléments* the actual collection (depository) which contained the specimens on which each nominal species was based, and these recorded depositories assist greatly in determining whether any specimen ought or ought not to be considered an original type (though other evidence is normally available also). The great majority of specimens are recorded as being in "Muséum", which refers to the Muséum National d'Histoire Naturelle, and many others are cited as being in the collection of "M. Bigot" ; almost always the cited depository is found to be correct, for it still contains the material referred to, but there are a very few cases of discrepancy. For a few species the cited depository is the collection not of the Paris Museum or of Bigot but of another naturalist or collector, but it appears that for all or nearly all of these the types are lost (or at least have never been located) and are now unlikely to be found. Reference has been made above to Macquart's method of citing specimens in his own collection in Lille by the use of the words "Ma collection" or "Mon cabinet".

The exact origins of the specimens with which Macquart worked, that is to say the type-localities of the nominal species that he described, are sometimes doubtful as the localities were only imprecisely noted by the expedition workers who collected the specimens. This is specially true of Australia, from which specimens may be cited in the *Diptères exotiques* and *Suppléments* as "De la Nouvelle-Hollande" (sometimes with the addition of "côte orientale"), or "De la Tasmanie" or even as "De l'Océanie" ; it is necessary to be cautious about attributing too definite a provenance to Macquart's Australian species, though the following information derived from Macquart's Australian Tachinidae and their accession labelling is believed to be a useful guide to the type-localities of his Australian species for which the type-material is in the MNHN, Paris, collection.

Four accession reference numbers are found on the Australian Tachinid types of Macquart in Paris (and probably are the normal accession numbers to be found on Australian specimens of other families) ; they are "13 44", "4 46", "2 47" and "3 47". Species whose types have the "13 44" reference were almost all described by Macquart as being from Tasmania, though a few were recorded as from Oceania : these appear on present evidence to be correctly recorded from Tasmania, and those recorded as from "Océanie" are also probably from Tasmania (they are certainly from mainland Australia if not from Tasmania). Species whose types have the "4 46" reference were described from Tasmania, but many of them appear not to have been found in Tasmania in recent collecting whereas they are known from eastern mainland Australia : these appear on present evidence to be mainly wrongly recorded from Tasmania, though possibly some may occur there. Species whose types have the "2 47" reference were recorded by Macquart as coming from the east coast of Australia ("Nouvelle-Hollande, côte orientale") and all evidence suggests that this is correct, New South Wales being the most likely provenance though possibly Queensland for some species. Finally, species whose types have the "3 47" reference were described from Tasmania : later knowledge of several of these species suggests that the eastern Australian mainland (especially New South Wales) is a more probable provenance, though the distribution ranges might include Tasmania and this could be the correct type-locality for at least some of the types bearing the "3 47" label.

MACQUART'S TYPE-MATERIAL OF AUSTRALASIAN, ORIENTAL AND ETHIOPIAN TACHINIDAE

[Note : the following list includes in square brackets those nominal species which are *not* Tachinidae but which might be assumed to belong to this family because of their original generic assignments by Macquart, and those Tachinidae which were wrongly recorded from the Old World areas covered and are now known to be American. Names that are not included in square brackets but are printed in non-bold italic type are unavailable or are junior primary homonyms.]

Amphibolia valentina Macquart, 1843 : 279 (122). ? holotype or syntypes ♂, AUSTRALIA ('Nouvelle-Hollande'): MHN, Lille (Macquart coll., box G.19).

In the original description Macquart stated that the material was in his personal collection ("Mon cabinet") and not in that of the Paris Museum. Macquart's own collection (what little remains of it) is in the Musée d'Histoire Naturelle at Lille and contains four specimens standing under the name *Amphibolia valentina*, of which one or some must be original type-material; the specimens cannot be loaned, and as I have not yet been able to see them it is not possible to say at present which specimens are types and whether all are males.

Macquart's material in Paris (MNHN) contains twelve specimens (6 ♂, 6 ♀) standing under the name *valentina*, but these have accession dates later than the original publication and none of them are type-specimens; they represent later material determined by Macquart, as do a ♂ and a ♀ from Bigot's collection in BMNH which bear identification labels in Macquart's writing.

Apatemyia longipes Macquart, 1846 : 325 (197). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2379).

Paralectotypes: 4 ♂, 2 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Apatemyia longipes Macq. n.sp." and is in poor condition with both mid legs missing; both it and the paralectotypes (also in bad condition, some lacking the abdomen) have accession labels "13 44". Standing with the type-material are two ♀ specimens with accession labels "3 47" without type-status.

As the type-material contains more than one male the citations of "Male Ht" by Townsend (1932 : 37, 1938 : 317) do not provide a valid fixation of lectotype for *longipes*.

Aprotheca rufipes Macquart, 1851 : 149 (176). Lectotype ♂, by fixation of Townsend (1932 : 49), TASMANIA: MNHN, Paris (No. 2266).

Paralectotype: 1 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Aprotheca rufipes Macq. n.g., n.sp. Tasm." and is in poor condition with both hind legs missing; the paralectotype ♀ is in appalling condition and probably mis-associated with the lectotype.

Townsend (1932 : 49, 1941 : 87) referred to the male syntype as "Ht" (= holotype) and to the female syntype as "At" (= allotype), and thereby provided a valid restriction of the male as lectotype.

Aulacephala maculithorax Macquart, 1851 : 139 (166). LECTOTYPE ♀, by present designation, MADAGASCAR, 1832 (*Houdot*): MNHN, Paris (No. 927).

Paralectotype: 1 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Aulacephala maculithorax ♀. Macq. n.g., n.sp.", and both it and the paralectotype have an accession label "86 39"; both specimens in poor condition, mouldy and with some legs missing.

Townsend's (1938 : 256) statement that the type is in Lille or lost is in error.

Blepharella lateralis Macquart, 1851 : 177 (204). Holotype ♂, INDIA, Pondicherry (*Perrottet*): MNHN, Paris (No. 670).

The holotype bears Macquart's label "Blepharella lateralis ♂. n.g., n.sp. Macq." and is in fair condition except for loss of left wing; the pin pierces the prosternum, but even so this is clearly bare (mentioned as this is an exceptional feature in Sturmiines).

Blepharipeza goniaeformis Macquart, 1846 : 285 (157). Lectotype ♀, by fixation of Townsend (1932 : 50), TASMANIA: MNHN, Paris (No. 2274).

Paralectotype: 1 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Blepharipeza goniaeformis Macq. n.sp." and is in appalling condition, all that remains being the eaten out shells of the head and thorax, both wings, and one complete leg. Both lectotype and paralectotype have accession labels "13 44", and the male paralectotype is mis-associated with the lectotype.

It is very regrettable that Townsend (1932 : 50, 1933 : 472), having seen that the male and female syntypes of *goniaeformis* in Paris Museum were wrongly associated, should have restricted the name to the female and then based his genus *Gonanamastax* Townsend, 1933, on the specimen; the male syntype is obviously a specimen of *Blepharipa* Rondani and is in much better condition than the female selected by Townsend, which he himself pointed out lacks the abdomen. However, Townsend has provided a technically valid restriction of the name *goniaeformis* to the female and his action, though ill advised, must be accepted as providing a lectotype fixation which in turn determines the characters of *Gonanamastax* Townsend.

The BMNH contains a female specimen from Bigot's collection with Bigot's label as "B. goniaeformis" but this specimen is not a type.

Calliphora rufiventris Macquart, 1847 : 98 (82). Holotype ♀, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Calliphora rufiventris. ♀ n.sp. Macq." and is in bad condition; all legs are missing, the left wing missing, the abdomen and right wing damaged and there is some mould.

This is a Tachinid, not Calliphorid, and will be generically assigned in a later work.

Chetogaster violacea Macquart, 1851 : 198 (225). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande, côte orientale': probably New South Wales): MNHN, Paris (No. 2336).

The holotype bears Macquart's label "Chetogaster violacea, ♂. Macq. n.g., n.sp." and an accession label "2 47", also a white rectangular ink label reading "1090", and is in good condition.

Chlorogaster tasmanensis Macquart, 1851 : 157 (184). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2273).

Paralectotypes: 2 ♂, 1 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Chlorogaster tasmanensis ♂♀ Macq. n.g., n.sp." and an accession label "3 47", and is in good condition. The paralectotypes bear accession labels "4 46" and one of the males is concealed in mould.

Townsend (1932 : 45, 1940 : 159) referred to a "Male Ht" for *tasmanensis* but as there are three original male syntypes this is not a valid lectotype fixation.

Chrysosoma flaviceps Macquart, 1851 : 158 (185). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande, côte orientale': probably New South Wales): MNHN, Paris (No. 2294)

The holotype bears Macquart's label "Chrysosoma flaviceps ♂. Macq., n.sp." and an accession label "2 47"; it is in fair condition except for a hole in the thorax and the head slightly crushed.

Townsend (1939*a* : 10) gave the type-location as "Paris or Lille" and the type-locality as "Brisbane, Queensland". The holotype is in Paris, and I know of no evidence that it came from Brisbane; this statement of Townsend is apparently mere assumption, probably derived from Macquart's citation of the "côte orientale" of Australia.

[*Clytia senegalensis* Macquart, 1843 : 221 (64). Not Tachinidae: belongs in Calliphoridae, tribe Rhiniini, genus apparently *Rhyncomya* Robineau-Desvoidy (syntype ♂ and syntype ♀ in MNHN, Paris, ref. no. 939, examined, ♂ syntype with Villeneuve determination label as *Rhyncomya*).]

Degeeria albiceps Macquart, 1851 : 175 (202). Holotype ♀, JAVA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Degeeria albiceps ♀. Macq. n.sp." and is in extremely bad condition; all mid and hind legs lost, thorax pierced by enormous large-headed pin through one side and out of the opposite supra-alar area, wings damaged, chaetotaxy rubbed. Sufficient remains to be certain, however, that *albiceps* belongs to a genus of the Campylochetini.

Degeeria australis Macquart, 1847 : 84 (68). Holotype ♀, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Degeeria australis n.sp. Macq. ♀"; it is in bad condition, head slightly crushed, large hole in scutellar region, left fore and mid legs lost and antennae lost, apical half of right wing missing.

Degeeria lateralis Macquart, 1851 : 176 (203). Holotype ♂, TASMANIA (publ. as 'De l'Océanie'): MNHN, Paris (No. 2293).

The holotype bears Macquart's label "Degeeria lateralis ♂. Macq. n.sp. Tasm." and an accession label "13 44". The condition is dreadful, entire specimen coated in a brittle deposit and thickly covered with mould, only one wing remaining.

Tasmania is here accepted as type-locality because the word "Tasm." appears on Macquart's own label, though the original description cited Oceania, and because the "13 44" accession reference signifies a Tasmanian origin.

The name is a junior primary homonym of *Degeeria lateralis* Macquart, 1848 (*Mém. Soc. Sci. Agric. Lille* **1847** : 208; *Dipt. exot.* **3** : 48), but no replacement name is proposed at the present time. The senior homonym applies to a valid North American species of *Metopia* Meigen in the Sarcophagidae and not to a Tachinid (see Sabrosky & Arnaud, 1965 : 937).

Dexia appendiculata Macquart, 1851 : 202 (229). Holotype ♂, TASMANIA: MNHN, Paris (No. 2344).

The holotype bears Macquart's label "Dexia appendiculata Macq. n.sp.", an accession label "4 46", and a rectangular white label with "1112" in ink. Condition fairly good.

Dexia brunnicornis Macquart, 1843 : 243 (86). Holotype ♂, LA RÉUNION ('l'ile Bourbon'): MNHN, Paris (No. 941).

The holotype bears a label in Macquart's writing "Dexia brunnicornis", a circular (apparently accession) label "86.3117" (the meaning of these figures not clear), and a rectangular label in faded ink "194.bis". The condition is fair, some dirt and rubbing, wings frayed, large hole in right base of abdomen.

Dexia javanensis Macquart, 1835 : 214. Holotype ♂, JAVA: not located, possibly lost.

Macquart described *Dexia javanensis* from a specimen which he stated to be from the "collection de M. Robyns de Bruxelles". The Robyns collection was bought by the Institut Royal des Sciences Naturelles de Belgique (as it is now called) in 1856, but none of the entomologists working at this Institute in Brussels during this century have been able to trace the collection (Verbeke, personal communication), and the type-material of *javanensis* is therefore possibly lost.

Dexia longipes Macquart, 1846 : 315 (187). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2341).

Paralectotypes: 3 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Dexia longipes ♂. Macq. n.sp." and is in good condition. Two of the ♂ paralectotypes are mis-associated with the lectotype, and belong to two different allied species.

Standing under the name *longipes* with the original type-material in MNHN there are four other specimens, two females and two males, the males differing from the syntypes by having the legs all black; these specimens are not original material, but are later material determined by Macquart and mentioned by him in the *3e Supplément* (1848 : 212–213 (52–53)); the smaller of the two females has Macquart's determination label reading "Dexia longipes. ♀. Macq. 1. supp.".

For some inexplicable reason Townsend (1932 : 37, 1938 : 343) referred to a specimen in Westermann's collection in Copenhagen as the male holotype, but there is no justification for this. None of Macquart's types are in Copenhagen, the original description of *longipes* indicated that the material was in Paris Museum, and the type-material is still present in Paris. It is puzzling why Townsend overlooked *longipes* when he studied the Macquart collection in Paris, and also why he did not realize that the label on the specimen in Copenhagen (quoted by Townsend, 1932 : 37, as "Dexia longipes Macq. Diemens Land: Bigot") was so obviously not an original Macquart label.

Dexia punctipennis Macquart, 1846 : 315 (187). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Dexia punctipennis ♂. Macq. n.sp." and is in poor condition; the specimen is very dirty with much mould, scutum crushed, right wing and right mid and hind legs lost, apices of left mid and hind tarsi missing.

Dexia rubricarinata Macquart, 1846 : 315 (187). Holotype ♂, TASMANIA: MNHN, Paris (No. 2342).

The holotype bears Macquart's label "Dexia rubricarinata Macq., n.sp." and an accession label "13 44"; it is in poor condition, dirty, abdomen greasy, thorax crushed, both hind legs missing.

There is a female specimen in extremely bad condition standing with the holotype, but this specimen has no type-status.

Dexia tessellata Macquart, 1851 : 202 (229). Holotype ♀, TASMANIA: MNHN, Paris (No. 2345).

The holotype bears Macquart's label "Dexia tessellata ♀. Macq. n.sp.", an accession label "3 47", and a rectangular white label with the ink figures "59"; the condition is poor, scutum crushed, both mid legs and one hind leg missing, one fore leg and most of the tarsus of remaining hind leg also lost, but head and wings good.

Dexia testaceicornis Macquart, 1851 : 201 (228). Holotype ♂, TASMANIA (publ. as 'De l'Océanie'): MNHN, Paris (No. 2343).

The holotype bears Macquart's label "Dexia testaceicornis ♂. Macq. n.sp." and an accession label "13 44"; condition extremely bad, head, thorax and fore legs enmeshed in fungal growth, one mid leg and both hind legs missing.

Though published as from Oceania the actual type-locality is Tasmania, as indicated on a label below the specimen in the Macquart collection; the holotype has the same accession reference as *Degeeria lateralis* Macquart, 1851 (see above), which is also from Tasmania though recorded as from Oceania.

Dexia triquetra Macquart, 1843 : 243 (86). Holotype ♂, LA RÉUNION ('l'ile Bourbon'): MNHN, Paris (No. 942).

The holotype bears a label in Macquart's writing "D. triquetra", a circular (apparently accession) label "86.3117" (the meaning of these figures not clear), and a rectangular label in faded ink "156". The left mid and hind legs and the left wing are missing, but the condition otherwise very good.

This species was described on the same page as *Dexia brunnicornis* (q.v., above) and the two types were evidently collected on La Réunion during the same expedition. Each bears an accession (or apparently an accession) label which appears to read "86.3117", though I am not fully certain that I have read the somewhat illegible figures correctly and am uncertain what they signify. Macquart's own label on *triquetra* holotype is more cryptic than usual, with the generic name abbreviated.

Diaphania ruficornis Macquart, 1851 : 193 (220). Holotype ♂, TASMANIA: MNHN, Paris (No. 2331).

The holotype bears Macquart's label "Diaphania ruficornis. ♂. Macq. n.sp.", and an accession label "3 47"; the condition is good except for loss of both third antennal segments.

A female specimen stands with the holotype but it has no type-status. This is certain because in the original description Macquart stated "Je n'ai observé qu'un seul individu mâle et pas de femelle".

Diaphania testacea Macquart, 1843 : 278 (121). ? holotype or syntypes ♂, AUSTRALIA ('Nouvelle-Hollande'): MHN, Lille (Macquart coll., box G.19).

In the original description Macquart stated that the material was in his personal collection ("Ma collection") and not in that of the Paris Museum. Macquart's own collection (what little remains of it) is in the Musée d'Histoire Naturelle at Lille and contains ten specimens standing under the name *Diaphania testacea*, of which one or some must be original type-material; the specimens cannot be loaned, and as I have not yet been able to see them it is not possible to say at present which specimens are types and whether all are males. According to a label with the specimens in Lille some of them are from "Van Diemen" (i.e. Tasmania) and these would not be original syntypes.

Macquart's material in Paris (MNHN) contains six specimens (3 ♂, 3 ♀) standing under the name *testacea*, but these have accession dates later than the original publication and none of them are type-specimens; they are later material identified by Macquart, and one of the males has Macquart's determination label reading "Diaphania testacea. ♂. Macq.".

Echinomyia rufoanalis Macquart, 1851 : 142 (169). Lectotype ♂, by designation of Crosskey (1967*b* : 103), INDIA ('Indes orientales'): BMNH, London (ex coll. Bigot).

The lectotype bears Macquart's label "Echinomyia rufo-analis ♂. Macq. n.sp." and is in fair condition; the abdomen and thorax are very rubbed, hole at base of scutellum, both hind legs missing.

Macquart described *rufoanalis* from two male syntypes ("Des deux individus ♂ observés, l'un a le duvet de la face et du thorax blanc, l'autre d'un blanc jaunâtre") but only the lectotype specimen has been located. The other specimen (paralectotype) must be presumed lost. The type-locality is certainly India and not East Indies, because as shown by Crosskey (1967*b* : 102) the name *rufoanalis* applies to a species of *Servillia* from Himalayan India.

Elomyia marginata Macquart, 1851 : 188 (215). ? holotype or syntypes ♂, SENEGAL: not located, presumed lost.

The MNHN, Paris, collections and indexes contain no references to this species, and my own search in the Paris collections revealed no trace of the type(s), and the type-material is almost certainly lost. Macquart recorded in the original description that he received the material from M. de Léséleur, to whom it might have been returned, but it seems unlikely that it will ever be found.

Eurigaster lateralis Macquart, 1843 : 215 (58). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande') MNHN, Paris (No. 937).

The holotype bears a name label "Eurigaster lateralis" in Macquart's writing, and two blue printed labels reading, respectively, "Muséum Paris, Ile Maurice" and "Museum Paris Col. Guerin-Meneville"; it is in excellent condition except for loss of one mid leg.

Macquart, in the original description, attributed this name to Guérin-Méneville and cited the type-locality as 'Nouvelle-Hollande' (i.e. Australia); however, the name was published by Macquart and not by Guérin-Méneville, and authorship attributes to Macquart. The type-locality of Australia cited by Macquart is accepted as correct, because *lateralis* is a Winthemiine of which other material has been seen from Australia, but it should be noted that a printed label attached to the holotype indicates "Ile Maurice" (i.e. Mauritius) as the locality; it is believed that *Eurigaster lateralis* holotype (MHNH number 937) must at some time have been labelled in error, and that it is by mistake that it is still to be found in the African material (and not among the Australian material) in the Macquart collection in Paris.

Exechopalpus rufipalpus Macquart, 1847 : 92 (76). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Exechopalpus rufipalpus. ♂ n.g., n.sp. Macq" and is in poor condition, dirty, much mould, the right mid and left hind legs missing and the chaetotaxy rubbed; the enormously elongated and projecting palpi (to which Macquart's generic name *Exechopalpus* refers) are, however, both present on the type.

Exorista auriceps Macquart, 1851 : 158 (185). Holotype ♂, TASMANIA (publ. as 'De l'Océanie'): MNHN, Paris (No. 2276).

The holotype bears Macquart's label "Exorista auriceps. ♂. Macq. n.sp. Ocean" and an accession label "13 44", and is in good condition except for a few threads of mould on the abdomen.

Macquart's description and label indicate Oceania as type-locality but Tasmania is the provenance indicated by the "13 44" reference number.

Exorista dispar Macquart, 1851 : 159 (186). LECTOTYPE ♂, by present designation, AUSTRALIA ('Nouvelle-Hollande, côte orientale': probably New South Wales): MNHN, Paris (No. 2277).

Paralectotypes: 1 ♂, 3 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Exorista dispar. ♂♀ Macq. n.sp. n.holl." and an accession label "2 47", and is in good condition. The ♂ paralectotype and one of the ♀ paralectotypes are correctly associated with the lectotype, but the other two ♀ paralectotypes (which bear accession labels "13 44" and "3 47" respectively) are specimens of the genus *Winthemia* R.-D. and are wrongly associated with the lectotype. It should be noted that all five specimens standing under the name *dispar* in the MNHN collection have been accepted as syntypes, because Macquart described the species from both sexes, and there is no evidence that any of the specimens were received later than the date of description.

Mesnil (1944 : 27) referred to "die australische Art *C. dispar* Macq. ♂, deren Type im Pariser Museum ist" when he described the genus *Carcelimyia* Mesnil, based on *dispar*, but his statement does not restrict the name to a single recognizable specimen from the type-series and therefore does not constitute valid lectotype fixation. The lectotype is therefore here newly designated.

Exorista diversicolor Macquart, 1847 : 83 (67). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Exorista diversicolor. ♂ n. sp. Macq." and is in good condition except for the loss of both mid legs, most of the right wing and a few setae.

Exorista flaviceps Macquart, 1847 : 83 (67). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Exorista flaviceps. n.sp. Macq." and is in very good condition except for loss of the left mid leg and slight greasing of the thorax.

Exorista flavipes Macquart, 1851 : 160 (187). Holotype ♀, TASMANIA (publ. as 'De l'Océanie'): MNHN, Paris (No. 2278).

The holotype bears Macquart's label "Exorista flavipes. ♀. Macq. n.sp. Oceanie" and an accession label "13 44", and is in good condition. The holotype belongs to a hairy-eyed species of the *Apatemyia* Macquart and *Toxocnemis* Macquart complex, which is confined to Australia and Tasmania, and the type-locality is here accepted as Tasmania because of the "13 44" accession reference.

Exorista lata Macquart, 1848 : 207 (47). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Exorista lata. ♂. nov.sp."; the condition is fair, slightly dirty with mould, large hole in abdomen and depression in scutellum, right mid and left hind legs missing.

Exorista marginata Macquart, 1851 : 161 (188). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2281).

Paralectotypes: 4 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Exorista marginata ♂. Macq. n.sp. Tasm." and an accession label "4 46"; the condition is fair, some mould and abdomen greasy, thorax badly damaged around the pin. The paralectotypes are all conspecific with the lectotype.

Mesnil (1949 : 82) placed *marginata* in the genus *Winthemia* R.-D. and the name as a synonym of *W. brevisetosa* (Macquart), remarking that "Die beiden Macquartschen Typen befinden sich im Pariser Museum"; this statement does not provide a valid lectotype fixation for *marginata*.

Exorista rufomaculata Macquart, 1851 : 160 (187). Holotype ♂, TASMANIA: MNHN, Paris (No. 2280).

The holotype bears Macquart's label "Exorista rufomaculata ♂. Macq. n.sp. Tasm." and an accession label "3 47"; the condition is bad, whole specimen very dirty with mould and greasy, one fore leg and both mid legs missing.

Exorista translucens Macquart, 1851 : 162 (189). Holotype ♂, TASMANIA: MNHN, Paris (No. 2282).

The holotype bears Macquart's label "Exorista translucens. ♂. Macq. n.sp. Tasm." and an accession label "3 47", and is in good condition except for slight mould and loss of one mid leg.

Exorista varipes Macquart. – See ***Masicera varipes.***

Gonia heterocera Macquart, 1846 : 281 (153). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2267).

Paralectotypes: 2 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Gonia heterocera ♂. Macq. n.sp." and an accession label "13 44", and is in very good condition except for loss of one hind leg and a little dirtiness. The ♂ paralectotypes are correctly associated with the lectotype, and also bear accession labels "13 44".

Standing with the type-material in MNHN are two female specimens (one without the abdomen) from Tasmania, but though Macquart described the female sex of *heterocera* these specimens are not original syntypes; they bear Macquart's labels reading, respectively "Gonia heterocera ♀ Macq. 1. suppl Tasm." and "Gonia heterocera ♀. Macq. sup." and are clearly therefore later determined material.

Macquart's original description of *heterocera* is unusual in that a description is given first of a female specimen cited as "De la Nouvelle-Hollande. Collection de M. le marquis Spinola" and this is followed by a description in larger type of some males cited as "De la Tasmanie. Muséum". However, as Macquart does not express any doubts about the correctness of the association of the Tasmanian males with Spinola's specimen of the female from Australia, all the specimens are syntypes and one of the original males has therefore been here designated as lectotype. It should be noted, however, that Townsend (1932 : 50, 1941 : 75) cited a female specimen in Paris from Tasmania at "Ht" [= holotype], but he did not provide a valid fixation of a lectotype thereby, because there are two females from Tasmania in the MNHN collection and neither of them is an original type-specimen. The original female syntype from Australia described from Spinola's collection is not in Paris, and is almost certainly lost.

Townsend (1932 : 50) cited a "female Pt [i.e. paratype] in Lima" of *Gonia heterocera*, and later (Townsend, 1941 : 75) cited the same specimen as being in Washington. This specimen (which is still present in the United States National Museum, Washington D.C.) was obtained by Townsend from MNHN, Paris, and placed in his Tachinid genotype collection in Lima, Peru, before this was moved to Washington; it is, as Townsend stated, a ♀, but it bears a circular pink-backed Paris Museum accession label reading "3 47", and this indicates beyond doubt that it was not an original type-specimen (syntype); it has, in fact, no type-status, and was clearly added to Macquart's collection at some time after the original description. The specimen has a handwritten label by Townsend indicating that in his opinion it belongs to "Tritaxys australis Mq (Gonia heterocera Mq)", but Townsend is in error in this synonymy (published by him, 1941 : 75).

The BMNH contains three specimens of *heterocera* from Bigot's collection (though probably not this species) of which one has Macquart's label "Gonia heterocera ♂. Macq." (though it is actually a female); the specimens are not type-material.

Gonia javana Macquart, 1848 : 203 (43). ? holotype or syntypes ♂, JAVA: not located, possibly lost.

Macquart stated that this was described "De Java. Collection de M. Payen". I have been unable to locate the type-material of *javana* and it is possibly lost.

Gonia javana Macquart, 1851 : 151 (178). LECTOTYPE ♂, by present designation, JAVA: BMNH, London (ex coll. Bigot).

Paralectotype: 1 ♀, same data as lectotype (BMNH).

The lectotype bears Macquart's label "Gonia javana ♂. M. n.sp", and is in good condition except for some damage to the scutum and loss of the right mid leg.

In the original description Macquart gave the depository as "Muséum" (i.e. MNHN, Paris), but it is considered that this is an error and that Macquart should have cited "M. Bigot" in his usual style for material received from Bigot. The MNHN collection has never, so far as known, contained a specimen of *Gonia javana* and though a reference (No. 667) occurs to the species in the Oriental box No. 17 of the Macquart collection and in the typescript catalogue to that collection, these entries are based on Macquart's "Muséum" statement only. On the other hand, the Bigot collection (now incorporated in BMNH, London) contains two specimens (a ♂ and a ♀) fitting Macquart's original description and of which the ♂ bears an original label (cited above) in Macquart's writing as *G. javana*; without doubt the specimens in the Bigot collection were the original material. Though Macquart mentioned only "♂" in the description, I have accepted the ♀ specimen standing with the ♂ as an original syntype because it is mounted exactly similarly to the ♂, the female sex is extremely similar to the male, and the probability is that both specimens were together when Macquart made his description.

Gonia javana Macquart, 1851, is a junior primary homonym of *G. javana* Macquart, 1848 (above). Wulp (1896 : 127) noted the homonymy with the statement "Nomen bis lectum" without providing a new name, and de Meijere (1924 : 222) published the replacement name *braueri*, at the same time assigning the species to the genus *Goniophana* Brauer & Bergenstamm. Thus the lectotype of *javana* Macquart, 1851, is type of *Goniophana braueri* de Meijere, 1924.

Gonia rubriventris Macquart, 1851 : 150 (177). Holotype ♀, SOUTH AFRICA, Cape of Good Hope: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Gonia rubriventris ♀. Macq. n.sp." and is in poor condition, specimen dirty and chaetotaxy rubbed, scutum party obscured by glue, left fore leg and some of the tarsi missing.

Gonia rufitibialis Macquart, 1851 : 151 (178). Holotype ♀, INDIA, Pondicherry (*Perrottet*): MNHN, Paris (No. 666).

The holotype bears Macquart's label "Gonia rufitibialis ♀. Macq. n.sp." and an accession label "2906 40"; it is in fair condition only, some mould and all right legs missing.

Grapholostylum dorsomaculatum Macquart, 1851 : 196 (223). LECTOTYPE ♂, by present designation, 'TASMANIE' [probably in error for New South Wales]: MNHN, Paris (No. 2334).

Paralectotypes: 2 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Grapholostylum dorso-maculatum ♂. Macq. n.g., n.sp." and an accession label "4 46", and is in very good condition. The two paralectotypes are conspecific with the lectotype and they also bear the accession number "4 46".

Townsend (1938 : 416) referred to a specimen in Bigot's collection as the holotype of *dorsomaculatum* with the statement "(Ht from Australia, in Newmarket)"; I have not found a specimen named as *dorsomaculatum* among Bigot's material of Rutiliini (to which tribe *Grapholostylum* belongs), but the specimen seen by Townsend, or at least recorded by him, cannot have been a type-specimen. Lectotype designation from the true type-material in Paris is therefore here necessary.

Recent knowledge of this species from collecting in Australia suggests that the true type-locality is probably New South Wales and not Tasmania (as cited by Macquart).

[*Gymnostylia quadrimaculata* Macquart, 1851 : 200 (227) (as *Gymnostylia*, 4 *maculata*). Recorded provenance "Triton Bay" (Indonesian New Guinea) undoubtedly in error. ♂ holotype assignable to *Dasyuromyia* or closely allied genus from southern Neotropical Region.]

Gymnostylia setosa Macquart, 1843 : 245 (88). Syntypes ♂ and ♀, SOUTH AFRICA ('Du Cap'): lost.

Macquart described this species from male and female specimens stated to be in Serville's collection. No type-material exists in the MNHN, Paris, and is considered to be lost.

The BMNH, London, collection contains a male specimen in very bad condition from Bigot's collection which bears an identification label in Macquart writing which reads "Gymnostylia setosa ♂. Macq."; although it is from the Cape of Good Hope (and labelled "Cap. b. Spe." by Bigot) it is almost certainly a specimen that was identified by Macquart at some time after the original description of *G. setosa*, and therefore not an original type-specimen. Brauer (1898 : 511) referred to this dirty and damaged specimen from Bigot's collection as a ♀ (though it is male, as Macquart's own label correctly records), and compared it to the Australian Rutiliini, relating it to *Paramphibolia assimilis* (Macquart); actually it is a *Billaea* s.l. species, as van Emden (1947 : 648) recognized.

Heterometopia analis Macquart, 1851 : 182 (209). LECTOTYPE ♀, by present designation, TASMANIA: MNHN, Paris (No. 2305).

Paralectotype: 1 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Heterometopia analis. ♀. Tasm [deleted on label] Macq. n.sp. Tasm" and an accession label "3 47"; the condition is fair, except for loss of one third antennal segment, both mid legs and half of one hind leg. The ♀ paralectotype is conspecific with the lectotype and also bears a "3 47" accession label; all legs are present on the paralectotype, but it was not fixed as lectotype because both its third antennal segments are lost and there is extensive damage to the scutum and scutellum.

Standing under the name *analis* with the type-material are four other specimens (1 ♂, 3 ♀) in appalling condition, of which the females are *Heterometopia* specimens but the male not this genus. As the male was not described by Macquart, and these four specimens have a different accession number from the two good type-specimens (i.e. good in comparison to these other specimens), these four extra specimens are considered not to be original material.

Heterometopia argentea Macquart, 1846 : 298 (170). LECTOTYPE ♂, by present designation, TASMANIA (*Verreaux*): MNHN, Paris (No. 2304).

Paralectotypes: 5 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Heterometopia argentea n.g., n.sp. Macq." and an accession label "13 44" and is in poor condition; both third antennal segments and all legs except left fore leg are missing, the chaetotaxy is damaged and there is a large hole in the abdominal dorsum. The ♂ paralectotypes, each with accession label "13 44" as the lectotype, are mainly very dirty and one lacks the head, but they appear to be conspecific with lectotype.

Standing with the type-material are two other male specimens without type-status, one with accession label "2900 40" and the other with a later determination label in Macquart's writing "Heterometopia argentea Macq. 1. supp Tasm".

Townsend (1932 : 35, 1939*b* : 222) referred to a male "Ht" (= holotype) in Paris, but did not thereby provide a valid lectotype restriction since there are several males to which his statement could apply. Paramanov (1960 : 696) referred to "Type in the Paris Museum", a statement not providing a lectotype fixation.

The BMNH collection contains a ♂ specimen bearing an identification label "Heterometopia argentea Macq." in Macquart's writing (Plate 1, F). It has no type status.

Heterometopia rufipalpis Macquart, 1847 : 90 (74). Holotype ♂ [not ♀], AUSTRALIA ('Nouvelle-Hollande'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Heterometopia rufipalpis, ♀ n.sp. Macq."; the condition is dreadful, specimen filthy with most characters completely obscured, right fore and mid legs and left fore leg lost, left wing lost, very mouldy.

Despite the condition this is undoubtedly a *Heterometopia* species, but the holotype is male and not female. This is one of the rare instances where Macquart mistook the sex, but in view of the extremely unusual appearance of the frons in the males of *Heterometopia* the mistake is not surprising. Brauer (1899 : 501) queried whether the sex was ♀, and Townsend (1932 : 35) cited it positively as ♂ although he had not seen the type; Townsend (*loc. cit.*) also refers to a male specimen in Vienna labelled "rufipalpis Mq. Type BB" but this specimen (not seen by me) cannot be part of the original type-material.

Hyalomyia rufiventris Macquart, 1851 : 188 (215). Holotype ♂, TASMANIA: MNHN, Paris (No. 2308).

The holotype bears Macquart's label "Hyalomyia rufiventris ♂. Macq. n.sp." and an accession label "3 47"; it is in good condition except for a thin shroud of mould.

Townsend (1916*b* : 45) erected the genus *Austrophasia* for this species on the basis of Macquart's wing figure alone, not having seen the holotype. He must evidently have overlooked this when he later visited Paris, for in the *Manual of Myiology* (Townsend, 1938 : 41) he was unable to give the type sex and stated "location, Paris or lost". Presence of the holotype in MNHN, Paris, is here confirmed.

Hystricephala nigra Macquart, 1846 : 283 (155). Holotype ♂, SOUTH AFRICA ('Cafrerie' = Caffraria): not located, presumed lost.

This is the type-species of *Hystricephala* Macquart, and the holotype has unfortunately never been located; it was described from a specimen collected by Monsieur Delegorgue in Caffraria, but this specimen is not in the MNHN, Paris, collection and is almost certainly lost. Townsend (1938 : 298) thought that it might be in Lille, but it is not in fact present in the Macquart collection there.

The generic name *Hystricephala*, as the type of the type-species is lost, has remained enigmatic, and the placements of the genus in Trichoprosopini by Townsend (1938 : 298) and Dexiinae by van Emden (1947 : 630) are based on unconfirmed guess-work. From Macquart's description *H. nigra* might well belong in some quite different Tachinid tribe, or conceivably not be a Tachinid at all.

Lydella boscii Macquart, 1843 : 217 (60). Holotype ♂, MAURITIUS ('l'ile de France') (*Bosc*): not located, presumed lost.

This was stated by Macquart to be in the collection of M. Serville, of which the Diptera are believed to be lost. The type is recorded as lost in the typescript catalogue of the Macquart collection in Paris (No. 938).

[*Jurinia australis* Macquart, 1855 : 117 (97). Recorded provenance "Nouvelle-Hollande" in error. ♀ holotype (in BMNH, ex coll. Bigot) belongs in New World genus *Archytas* Jaennicke, possibly to *A. analis* (Fabricius), as correctly established by Brauer (1898 : 500).]

Masicera argenticeps Macquart, 1851 : 166 (193). Holotype ♂ [not ♀], ? SOUTH-EAST ASIA (publ. as 'De l'Océanie'): MNHN, Paris (No. 2296).

The holotype bears Macquart's label "Masicera argenticeps ♀. Macq. n.sp.", and is in good condition except for loss of most of the frontal setae. This is one of the few types for which Macquart mistook the sex, labelling and publishing it as female in error; Mesnil (1949 : 11, 1951 : 163) has also drawn attention to this.

This species is known from South-East Asia (India, Formosa, Thailand, Malaya) and not from the Pacific area, so that Macquart's citation of Oceania as the provenance is almost certainly in error.

Masicera auriceps Macquart, 1851 : 168 (195). LECTOTYPE ♀, by present designation, 'TASMANIE' [or possibly New South Wales]: MNHN, Paris (No. 2300).

Paralectotype: 1 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Masicera auriceps. ♀ Macq. n.sp. Tasm" and an accession label "4 46" and is in good condition except for loss of part of one mid leg and a hole in the abdomen. The ♀ paralectotype appears to be conspecific with the lectotype and bears a white rectangular label "653" (there is no evidence that it was not available to Macquart at the time of description and it is therefore held to be original material).

The name is a junior primary homonym of *Masicera auriceps* Macquart, 1843 (*Mém. Soc. Sci. Agric. Lille* **1843** : 216; *Dipt. exot.* **2** (3) : 59), but no replacement name is proposed at the present time.

Masicera caffra Macquart, 1846 : 290 (162). Holotype or syntypes ♀, SOUTH AFRICA ('Cafrerie' = Caffraria): not located, presumed lost.

This species was described from a ♀ specimen (or possibly more than one specimen) collected by Monsieur Delegorgue in Caffraria, but the material is not in MHNH, Paris, and is almost certainly lost. Villeneuve (1916 : 490) erected the genus *Lydellina* for this species, though in the absence of type-material the species was recognized only from the original description; I see no reasons why Villeneuve's identification of Macquart's *caffra* should be in error, and there is no evidence to support Townsend's (1933 : 469) statement that *caffra* of Villeneuve "is quite distinct from Lydella caffra Mcq." (which was based simply on the assumption that, as Macquart had not mentioned the tiny setulae on the facial ridges which are present in *caffra* as recognized by Villeneuve, there must have been a misidentification involved).

Masicera capensis Macquart, 1855 : 120 (100). ? holotype ♂, SOUTH AFRICA ('cap de Bonne-Espérance'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Masicera capensis. ♂ Macq" and is in good condition except for a hole in the scutum and another on the side of the thorax (clearly due to specimen originally having been on a larger pin and subsequently re-pinned); a few frontal setae missing.

This is one of the few of Macquart's holotypes described in the *Suppléments* on which his label lacks the usual "n.sp." inscription.

Masicera coesiofasciata Macquart, 1851 : 165 (192). Holotype ♀, AUSTRALIA ('Nouvelle-Hollande, côte, orientale': probably New South Wales): MNHN, Paris (No. 2295).

The holotype bears Macquart's label "Masicera coesiofasciata Macq. n.sp. n. holl." and an accession label "2 47"; it is in fair condition, except for some dirt and mould, hole in scutum, and one missing mid leg.

Masicera consanguinea Macquart, 1851 : 167 (194). Holotype ♂, TASMANIA: (publ. as 'De l'Océanie'): MNHN, Paris (No. 2297).

The holotype bears Macquart's label "Masicera consanguinea ♂. Macq. n.sp. n. holl.", an accession label "13 44" and a rectangular white label reading "49" in faded ink; condition extremely bad, specimen completely coated in brittle deposit and fungal threads, little of the characters visible except for thick golden hairing of ♂ hypopygium and wing venation. Belongs in the Exoristini.

Masicera fulviventris Macquart, 1851 : 165 (192). LECTOTYPE ♂, by present designation, 'TASMANIE' [probably in error for New South Wales or Queensland]: MNHN, Paris (No. 2299).

Paralectotypes: 1 ♂, 4 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Masicera fulviventris Macq. n.sp. Tasm." and an accession label "4 46"; it is in good condition except for some dirtiness. The four ♀ paralectotypes appear to be conspecific with the lectotype; one of them has an accession label "2 47" but the others have the same accession number as the lectotype. The one ♂ paralectotype is mis-associated with the lectotype, and is a specimen of *Winthemia* R.-D.

All specimens standing under the name *fulviventris* in the MNHN collection have been accepted as original syntypes, as there is no evidence to the contrary. The specimen chosen as lectotype preserves the concept of the name given in Mesnil (1950 : 138).

Masicera lateralis Macquart, 1846 : 291 (163). LECTOTYPE ♂, by present designation, AUSTRALIA ('Nouvelle-Hollande'), Sydney: BMNH, London (ex coll. Bigot).

Paralectotype: 1 ♂, same data as lectotype (BMNH).

The lectotype bears Macquart's label "Masicera lateralis ♂. Macq. n.sp.", and is in fair condition; specimen extremely dirty and thorax slightly greased, right wing frayed, both third antennal segments lost, abdominal chaetotaxy rubbed, but all legs are present. The ♂ paralectotype is apparently conspecific with the lectotype, and in bad condition, extremely dirty and all fore and mid legs missing; it does, however, retain the left third antennal segment and arista. Macquart cited the provenance as simply "Nouvelle-Hollande", but Bigot's own label from his collection indicates "Sidney" (= Sydney), New South Wales.

Masicera niveiceps Macquart, 1851 : 164 (191). Holotype ♂, JAVA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Masicera niveiceps. ♀. Macq. n.sp" and is in very bad condition: left third antennal segment, mouthparts, right wing and all legs except left hind leg lost, dorsum of thorax smashed and rubbed bare, some setae of pleural regions and head lost.

Masicera niveifacies Macquart, 1851 : 164 (191). Holotype ? ♂ or ♀ (publ. as ♀), ASIA ('Asie'): MNHN, Paris (No. 669).

The holotype bears Macquart's label "Masicera niveifacies ♀. Macq. n.sp." and an accession label "2108 42"; the condition is extremely bad, with the antennae, mouthparts, one wing, all legs except one fore leg, and the abdomen lost, and the thorax damaged.

The head of the holotype possesses proclinate orbital setae and the sex therefore appears at first glance to be female, as published and labelled by Macquart. However, despite the appalling condition, it is certain that *niveifacies* is a Carceliine extremely close to and perhaps even the same as *Argyrophylax proclinata* Crosskey in which the male as well as the female has proclinate orbital setae; there is a possibility therefore that the holotype is a male.

The true provenance of *niveifacies* is unfortunately unknown having been cited by Macquart simply as Asia; the label under the holotype in MNHN gives the locality as "Java" but I suspect that this is through confusion with *niveiceps*, which was described from Java on the same page as *niveifacies*. *Argyrophylax proclinata* Crosskey is known from New Guinea and New Britain, and Macquart's *niveifacies* is undoubtedly very close to this species, if not actually the same; it has not yet been possible to make a critical comparison directly between Macquart's holotype and Oriental material of *Argyrophylax* species, but such comparison might possibly determine with more certainty whether *niveifacies* is a senior synonym of *proclinata* based upon a male specimen with proclinate orbital setae.

The foregoing discussion implies assignment of *niveifacies* to the genus *Argyrophylax* Brauer & Bergenstamm, but I am not establishing a definite new combination at this time.

Masicera oblonga Macquart, 1847 : 86 (70). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Masicera oblonga. ♂. n.sp. Macq" and is in good condition except for some dirtiness, fraying of the wings, and slight rubbing of base of abdomen and scutellum.

Masicera rubrifrons Macquart, 1847 : 85 (69). Holotype ♀, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Masicera rubrifrons. ♀ n.sp. Macq."; it is in very bad condition, left antennae, all right legs and left mid leg lost, wings damaged, body greasy, chaetotaxy disarranged.

Masicera rufifacies Macquart, 1847 : 87 (71). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Masicera rufifacies. ♂ n.sp. Macq." on which Macquart has also written in slightly smaller writing the words "Van Diemen.", these words having been inserted between the second and third lines of the inscription. The condition is poor, body greased, aristae, right mid leg and one fore leg lost, right wing and base of abdomen damaged, eyes and scutellar base dented, some chaetotaxy lost; the remaining fore leg not articulated, adhered to thoracic venter. The ♂ genitalia are removed from the holotype and slide-mounted (slide in BMNH).

Masicera rufipes Macquart, 1847 : 86 (70). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Masicera rufipes. ♂ n.sp. Macq."; the condition is fair, slightly dirty, left side of head collapsed, all legs present but left hind leg detached and adhered to pin, traces of glue on left of abdomen and on scutum, some damage to bristling.

Masicera similis Macquart, 1851 : 167 (194). Holotype ♀, TASMANIA: MNHN, Paris (No. 2298).

The holotype bears Macquart's label "Masicera similis ♀ Macq. n.sp. Tasm.", an accession label "3 47" and a rectangular white label "49" in faded ink. The condition of the specimen was bad when described, for Macquart stated in the original description that it was "en grande partie dénudée"; it is now in dreadful condition, completely and thickly coated with fungus though structurally complete.

Masicera simplex Macquart, 1847 : 87 (71). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Masicera simplex. ♂ n.sp. Macq."; it is in fair condition, except for loss of both mid legs and left fore and hind legs, large hole in abdominal base and glue obscuring scutellum.

Masicera tenuisetosa Macquart, 1848 : 206 (46). ? holotype or syntypes ♂, JAVA: not located, possibly lost.

Macquart stated that this was described "De Java. Collection de M. Payen". I have been unable to locate the type-material of *tenuisetosa* and it is possibly lost.

Masicera varipes Macquart, 1846 : 291 (163). Holotype ♂, TASMANIA (*Verreaux*): MNHN, Paris (No. 2283).

The holotype bears Macquart's label "Exorista varipes. ♂. Macq. n.sp." and an accession label "13 44"; although the body shell is eaten out, the holotype is otherwise in good condition.

This is the only case known to me among Macquart's types (apart from *Rutilia fuscotestacea*, q.v.) in which the original label in Macquart's writing shows a different generic combination with the specific name than the published binomen; despite the discrepancy there is no doubt that the specimen labelled as "Exorista varipes" is actually the holotype of *Masicera varipes*, for no specimen exists in the Paris Museum bearing the latter name and the specimen labelled as "Exorista varipes" agrees in every respect with the information published by Macquart for *M. varipes*. I have annotated the MNHN collection to show that the specimen standing in the collection under No. 2283 as "Exorista varipes" is in fact holotype of *Masicera varipes* (which in the MNHN typescript catalogue of the Macquart collection was wrongly recorded as lost).

Robineau-Desvoidy (1863 : 543) re-described the specimen labelled as "Exorista varipes" and referred to it as "*Phryno varipes*, Macq.", perhaps without realizing that it had been described by Macquart, for below the heading he cited "*Exorista varipes*: Macq. – *Collect. du Muséum.*"; Mesnil (1954 : 341), however, noted that *Phryno varipes* (Macquart) was described as a *Masicera*. It could be maintained that there is a nominal species *Phryno varipes* of Robineau-Desvoidy, but if so it would be a junior objective synonym of *Masicera varipes* Macquart through being based on the same type-specimen, and I see no point in treating *Phryno varipes* of Robineau-Desvoidy as anything other than a later citation of *varipes* Macquart.

Masicera viridiventris Macquart, 1847 : 84 (68). Lectotype ♂, by fixation of Townsend (1939*a* : 15), TASMANIA: BMNH, London (ex coll. Bigot).

Paralectotype(s): none located, probably lost.

The lectotype bears Macquart's label "Masicera viridiventris n.sp. Macq."; it is in poor condition and head and abdomen have at some time been re-attached with adhesive to the thorax, both hind legs and right mid leg are missing, the third antennal segment of left side is lost, and some setae are rubbed off; the right fore leg is detached from the body and glued to the circular lectotype label.

Macquart described this species from both sexes, but only the one ♂ specimen here recorded was present in Bigot's collection when this was incorporated into the BMNH collection. Townsend (1939*a* : 15) referred to the one available ♂ syntype in Bigot's collection as "Ht male", and since this provides a restriction of the name to one definitely recognizable specimen I accept it as valid lectotype fixation. A thorough search has been made of the Bigot material in BMNH but no original female syntypes have been found, and their loss must be presumed.

[*Masicera viridiventris* Macquart, 1851 : 163 (190): second use of name by Macquart, junior primary homonym of *Masicera viridiventris* Macquart (above). Recorded provenance "Égypte". Townsend (1916*a* : 152) stated that the given locality Egypt was in error, and that *viridiventris* Macquart, 1851, was the female and a synonym of *viridiventris* Macquart, 1847, and therefore from Australia or Tasmania by presumption; he stated the same view in the *Manual of Myiology* (Townsend, 1939*a* : 15) though he had not seen the types of either nominal species. The type-material cannot be found of *viridiventris* Macquart, 1851 among the Bigot material and the supposed synonymy given by Townsend cannot be confirmed; neither is there any evidence that *viridiventris* Macquart, 1851, had an Australasian provenance. Pending such evidence the stated type-locality Egypt must be accepted as correct, and the synonymy given by Townsend must be rejected as unproven.]

[*Megistogaster fuscipennis* Macquart, 1851 : 186 (213). Recorded provenance "Java" in error. The ♂ holotype (in BMNH ex coll. Bigot) is a specimen of *Cordyligaster* Macquart, as known and accepted since being first noticed by Brauer (1897 : 365), and undoubtedly had a South American provenance. Name applies in the Neotropical fauna.]

Micropalpus analis Macquart, 1855 : 118 (98). Holotype ♀, GABON ('royaume de Gabon'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label (incomplete) reading "Micropalp analis. ♀. Macq." and is in good condition except for some dirtiness, a crack in the scutum, slight tear in left wing, and loss of a few setae.

This is a species of *Linnaemya* R.-D., and the name is a junior secondary homonym in this genus of *L. analis* R.-D., 1830. Van Emden (1960 : 462) has noted the homonymy and pointed out that no replacement name is required because the synonym *L. laxiceps* (Villeneuve) applies.

Micropalpus assimilis Macquart, 1847 : 81 (65). ? holotype or syntypes ♀, MADAGASCAR: lost.

The type-material of this species is stated to be lost in the typescript catalogue of the Macquart collection in MNHN, Paris, and none was found from my own searches. It is considered truly lost.

Micropalpus bicolor Macquart, 1848 : 204 (44). Holotype ♀, AUSTRALIA ('Nouvelle-Hollande'): not located, presumed lost.

Macquart described this species from a single female from Monsieur Fairmaire's collection; that he had only one specimen is clear from his comment "L'individu que nous décrivons a la trompe et les palpes mutilés".

The Diptera from Fairmaire's collection are apparently lost, and it is now unlikely that the holotype will be found. There are however specimens of *bicolor* determined, and some labelled, by Macquart in both the MNHN, Paris, and the BMNH, London, collection as detailed below.

Standing in MNHN Macquart collection are eight ♀ specimens under the name *Micropalpus bicolor*, one of which has Macquart's determination label "Micropalpus bicolor. ♀. Macq. 1. supp. Tasm."; in the BMNH collection there are two ♂ specimens, each with Macquart's determination labels reading respectively "Micropalpus bicolor. var. ♀. Macq. J.B." and "Micropalp bicolor ♀ Macq.", both specimens from Bigot's collection (the initials "J.B." on one of Macquart's labels signify J. Bigot). Bigot's specimens were from Sydney, according to the locality written on his label. Townsend (1932 : 42), in his discussion of *M. brevigaster*, cited one of the Bigot collection specimens from Sydney as "female Ht" of *M. bicolor*, but this was in error, as the specimens from Bigot's collection are not type-material.

Micropalpus brevigaster Macquart, 1846 : 277 (149). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Micropalpus brevigaster ♂. Macq. n.sp." and is in fair condition; both fore legs and both hind tarsi lost, tibia and tarsus of left mid leg lost, some fraying of wings.

The Bigot collection, when incorporated into BMNH collection, contained a series of two ♀ and three ♂ specimens of *brevigaster* standing with the holotype, but as the female sex was not originally described and as one of the males bears a later determination label of Macquart reading "Micropalpus brevigaster. ♂ Macq.", none of these specimens (now all in BMNH) are considered to be original material.

Micropalpus concavicornis Macquart, 1851 : 146 (173). Holotype ♂ [not ♀], AUSTRALIA ('Nouvelle-Hollande, côte orientale': probably New South Wales): MNHN, Paris (No. 2263).

The holotype bears Macquart's label "Micropalpus concavicornis ♀. Macq. n.sp. nov. holl." and an accession label "2 47"; it is in fair condition, but right fore and mid legs lost, eyes partially collapsed, and thorax and abdomen greasy.

This is one of the few instances where Macquart mistook the sex of the holotype, which is ♂ (not ♀ as published and labelled).

Micropalpus longirostris Macquart, 1843 : 203 (46). Syntypes ♂, SOUTH AFRICA ('Du Cap'): lost.

Macquart described this species from specimens in the "collections de MM. Serville et Guerin" (a statement which confirms that *longirostris* was based on more than one syntype). The original material cannot be found in MNHN collection, and is considered to be lost; it is recorded as lost in the typescript catalogue of Macquart's collection in Paris (ref. no. 929).

However, the BMNH collection contains one ♀ and two ♂ specimens of *M. longirostris* from the Bigot collection, of which one of the males has an identification label in Macquart's writing which reads "Micropalpus longirostris ♂. Macq."; this is the ♂ specimen to which Brauer (1897 : 369) referred, and the obverse side of Macquart's label bears Brauer's reference. Townsend (1939*a* : 215) erroneously referred to "Ht male – Origin, Cape Good Hope; location Newmarket" for *M. longirostris*, wrongly assuming that the ♂ specimen seen by Brauer was the holotype, and clearly overlooking the fact that the species was originally described by Macquart from specimens in the collections of Serville and Guérin-Méneville.

The specimens from Bigot's collection have no type-status, though it may be noted that the specimen from Bigot's collection named by Macquart himself is undoubtedly correctly identified and establishes the identity of *Micropalpus longirostris* without doubt.

Micropalpus pilifacies Macquart, 1851 : 146 (173). Holotype ♂ [not ♀], AUSTRALIA ('Nouvelle-Hollande, côte oriental': probably New South Wales): MNHN, Paris (No. 2262).

The holotype bears Macquart's label "Micropalpus pilifacies. ♀ Macq. n.sp. n.holl." and an accession label "2 47"; it is in fair condition, both third antennal segments and both mid legs lost, scutum slightly crushed.

This is one of the few instances where Macquart mistook the sex; the holotype, though ♂, has a very wide frons and proclinate orbital setae and therefore resembles a ♀.

Micropalpus vittatus Macquart, 1846 : 278 (150). Holotype ♂, TASMANIA: MNHN, Paris (No. 2265).

The holotype bears Macquart's label "Micropalpus vittatus. ♂. Macq. n.sp." and an accession label "13 44"; it is in very good condition except for loss of some setae and one mid leg.

Standing in MNHN collection with the holotype are five other specimens (4 ♂, 1 ♀) but none of these are considered to be original type-material for these reasons: the ♀ specimen (even though it bears a "13 44" accession number like the ♂ holotype) was recorded later by Macquart (1851 : 146 (173)), when he stated that he had seen the female since describing the male earlier, and the ♀ bears a later determination label of Macquart reading "Micropalpus vittatus. ♂♀ Macq. 1. supp. Tasm."; this label on the ♀ mentions the ♂ sex as well, and this makes it evident that there were specimens of both sexes which were not seen by Macquart at the time of original description, even though they were received in MNHN in 1844 – three of the four males, labelled "13 44" are considered to be later material in this category; the one remaining ♂ has an accession label "3 47" and is therefore certainly not an original specimen. One other point thought to give further confirmation that only one male was original material (therefore holotype) is the fact that it is mounted on a different type of much thicker pin than all the other specimens.

There is a possibility that Australia and not Tasmania is the true provenance of this species.

Microtropesa ignipennis Macquart, MS name. Name published by Brauer (1899 : 510–511) as *Microtropeza ignipennis* Mcq. and placed in synonymy with *Microtropesa sinuata* (Donovan), therefore unavailable from first publication by Brauer under Article 11 (d) of the *International Code of Zoological Nomenclature*, 1961.

The Macquart collections in MNHN, Paris, and in MHN, Lille, contain specimens standing under the name *Microtropesa ignipennis* Macquart and identified as such by Macquart; as the name *ignipennis* was unpublished by Macquart and unavailable from publication by Brauer they have no status. They are, in fact, specimens of *M. sinuata*, though no direct comparison can be made as Donovan's type-material of *sinuata* is lost (Townsend's statements, 1932 : 40 and 1939*a* : 13, of a female holotype in London are in error).

Microtropesa nigricornis Macquart, 1851 : 199 (226). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2338).

Paralectotypes: 1 ♂, 1 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Microtropesa nigricornis. ♂.♀. Macq. n.sp.", an accession label "3 47" and a rectangular white label with "107" in faded ink; it is in very good condition.

The ♀ paralectotype is conspecific with the lectotype and has no accession label, but the ♂ paralectotype is mis-associated with the lectotype and has an accession label "2 47"; the latter specimen has the abdominal ground colour blue-black and only one pair of median marginal setae on tergite 3 (instead of ground colour dark tawny brown and five pairs of median marginals on tergite 3 as in the lectotype), and appears to be a specimen of *Microtropesa intermedia* Malloch. The syntype ♂ which has been fixed as lectotype is the one agreeing most closely with Macquart's description and plate figure.

Myobia cingulata Macquart, 1851 : 179 (206). LECTOTYPE ♂, by present designation, 'TASMANIE' [more probably New South Wales, see annotation]: MNHN, Paris (No. 2303). Paralectotypes: 9 ♂, same data as lectotype (8 in MNHN, 1 in BMNH).

The lectotype bears Macquart's label "Myobia cingulata. ♂♀ Macq. n.sp. Tasm. n.holl." and an accession label "4 46"; it is in rather poor condition (though better than other syntypes) and has both third antennal segments and left fore and mid legs lost, holes in eyes and thorax, part of left hind femur missing.

This species was described from both ♂ and ♀ sexes (as shown by Macquart's label on the lectotype as well as the original description) but no ♀ syntype has been found. With the lectotype in MNHN are eight males which are all considered syntypes, in the absence of contrary evidence, of which six have the "4 46" accession label like the lectotype and of which the others have each an accession label "2 47"; the BMNH collection also has one male syntype (paralectotype) with a "2 47" label, and this specimen has another label reading "Recd. in exchange from Mus. Nat. d'Hist. Nat., Paris. B.M. 1924–101" (an exchange arranged by Austen in 1924).

Special attention must be drawn to the locality information for *cingulata* published by Macquart. In the original description he stated that the provenance was "Nouvelle-Hollande, côte orientale, et de la Tasmanie", and his own label (on the lectotype) bears the words "Tasm. n.holl." (i.e. Tasmania and Australia). The individual syntypes do not carry data labels showing which were from Australia and which from Tasmania, but this can be deduced from the accession labels: labels "2 47" refer to specimens from "Nouvelle-Hollande, côte orientale" (see also, for example, *Chetogaster violacea* and *Exorista dispar*), whereas specimens with accession reference "4 46" are recorded in MNHN and by Macquart as being from Tasmania; however, no subsequent material of *Trigonospila cingulata* (Macquart) or of, for example *Grapholostylum dorsomaculatum* Macquart (q.v.), species whose types bear the "4 46" reference and are said to be from Tasmania, has been found in Tasmania, and it seems likely that for such species there is an error in the published locality data. Probably the original material came from New South Wales.

Townsend (1932 : 36, 1933 : 457, 1939*b* : 155) referred in error to a male holotype of *cingulata* from east Australia; as however there are several such original syntypes the statement of Townsend does not provide fixation of a lectotype, which is here newly designated.

Myobia ruficeps Macquart, 1847 : 89 (73). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Myobia ruficeps. ♂ n.sp. Macq." and is in very bad condition, with all legs lost, head partly collapsed, thorax and abdomen slightly rubbed and greasy.

Myobia tenuisetosa Macquart, 1847 : 90 (74). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Myobia tenuisetosa. ♂ n.sp. Macq." and is in bad condition; both hind legs and left mid leg are lost, apex of remaining mid tarsus and right fore leg from base of tibia also missing, right arista lost, specimen slightly dirty and thorax and abdomen rubbed and a little greasy.

Nemoraea brevisetosa Macquart, 1846 : 282 (154). Holotype ♂, TASMANIA: MNHN, Paris (No. 2271).

The holotype bears Macquart's label "Nemoraea brevisetosa ♂. Macq. n.sp.", and an accession label "13 44"; it is in bad condition because the head, left fore leg and right mid and hind legs are missing (though what remains of the specimen is in good condition).

Nemoraea nitidiventris Macquart, 1851 : 155 (182). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande, côte orientale': probably New South Wales): MNHN, Paris (No. 2270).

The holotype bears Macquart's label "Nemoroea nitidiventris ♂ Macq. n.sp.", an accession label "2 47" and a rectangular white label with "46" in faded ink; it is in very good condition except for loss of left fore leg. The generic name is spelt *Nemoroea* on Macquart's original label but his published spelling was *Nemoraea*.

Nemorea rufipes Macquart, 1843 : 211 (54). Holotype ♂, South Africa ('cap de Bonne-Espérance'): MNHN, Paris (No. 936).

The holotype bears the label "Nemoroea rufipes" in Macquart's writing, a small rectangular label reading "Cap" in faded ink, and a circular blue label with the words "Guérin/Ménne-/ville" in mauve print; the holotype is in appalling condition, all that remains being the dorsal shell of the thorax and scutellum with wings attached and the dorsal shell of the abdomen, plus part of one hind leg; these remains are gummed to a card attached to a carrier pin. The generic name is spelt *Nemoroea* on Macquart's original label, but *Nemorea* was the published spelling.

Despite the condition it can be confirmed without doubt that this is a true *Nemoraea* R.-D., because both the calyptrae are undamaged and show the complete covering of long soft pale hair characteristic of most true *Nemoraea* species.

Nemoroea bicolor Macquart, 1851 : 155 (182). Holotype ♀, Java: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Nemoroea bicolor ♀ Macq. n.sp."; the condition is fair, left fore and mid legs lost and right fore and hind tarsi lost (except for basitarsal segment), dorsum of thorax greased and its chaetotaxy rubbed.

Ochroplevrum javanum Macquart, 1851 : 185 (212). Holotype ♂, Java: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Ochroplevrum javanum ♂. Macq. n.sp" and is in rather poor condition; the body is greased and head very dirty, the right fore leg and left mid legs are missing, the scutum is perforated and base of the abdomen constricted. The ♂ hypopygium is in good condition and contained in a small vial attached to the specimen.

Ocyptera flavifrons Macquart, 1851 : 187 (214). LECTOTYPE ♂, by present designation, 'Tasmanie' [more probably New South Wales, see annotation]: MNHN, Paris (No. 2307).

Paralectotype: 1 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Ocyptera flavifrons. ♂. Macq. n.sp. Tasm." and an accession label "4 46"; the specimen is very dirty, lacks some setae and has a dent in left eye, but otherwise is in good condition. The ♂ paralectotype is conspecific with the lectotype and also bears the "4 46" accession reference (it is certainly an original syntype because it bears this number and also because Macquart indicated a size range for *flavifrons*, showing that there was more than one specimen).

It is probable that Tasmania is not the correct provenance, as this is one of the "4 46" reference species for which no later material has been found in Tasmania; Paramonov (1956 : 369–370) has recorded many specimens from the Australian mainland, but none from Tasmania, and it is probable that New South Wales is the true provenance of the original material.

Ocyptera pictipennis Macquart, 1835 : 186. Holotype ♂, Senegal: MNHN, Paris (No. 940).

The holotype bears a label in Macquart's writing "Ocyptera pictipennis Macq." and a circular white label reading "Senegal Guerin"; the specimen is largely destroyed, all that remains is one wing and part of the thorax which are glued to the pin.

Despite the condition, the wing pattern (to which Macquart's specific name refers), the scutellar setae and the scutal pattern confirm that this species is correctly recognized in van Emden (1945 : 405, 407).

Omalogaster appendiculatus Macquart, 1846 : 318 (190). *Nomen nudum*, cited in description of *Omalogaster limbinevris*.

Omalogaster brevipalpis Macquart, 1846 : 317 (189). LECTOTYPE ♂, by present designation, Tasmania: MNHN, Paris (No. 2347).

Paralectotype: 1 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Omalogaster brevipalpis. Macq. n.sp." and an accession label "13 44"; it is in fair condition, both hind legs missing and abdomen crushed. The ♀ paralectotype also has the "13 44" accession label, and is probably mis-associated with the lectotype; it is in very bad condition, with abdomen, one wing and all but one leg lost and thorax badly smashed.

Omalogaster limbinevris [*sic*] Macquart, 1846 : 317 (189). Holotype ♀ [publ. as '♂', labelled as '♀'], TASMANIA: MNHN, Paris (No. 2348).

The holotype bears Macquart's label "Omalogaster limbinevris. ♀. Macq. n.sp." and an accession label "13 44"; it is in poor condition, very dirty, scutum damaged, all legs lost except right hind leg (even this lacks the tarsus except for basitarsus), right third antennal segment lost, wings torn.

The spelling *limbinevris* is accepted as correct, because it is consistent both in original publication and on Macquart's original label, and also because Macquart repeated this spelling in his table of species described in the *Diptères exotiques* work and its first four *Suppléments* (see p. 358 of *Suppl.* 4, 1851); it is therefore considered *not* to be an incorrect original spelling, by inadvertent error, of 'limbinervis'.

Omalogaster nitidus Macquart, 1846 : 318 (190). ? holotype or syntypes ♀, TASMANIA: not located, probably lost.

This species was described from female specimen (or possibly more than one specimen) recorded by Macquart as "De la Tasmanie. Muséum", and the type-material should be in MNHN, Paris. The name appears in one of the boxes of Australian material in the Macquart collection in Paris, and also in the typescript catalogue to this collection (No. 2350), but the original material can no longer be found in MNHN and is presumably lost or destroyed.

However, the BMNH collection in London contains one ♀ specimen from the Bigot collection which fits Macquart's description and is a later specimen identified by Macquart, for it bears his label "Omalogaster nitidus. ♀. Macq." and the pencilled word "Sydney"; Bigot's label also gives the locality Sydney for this specimen, which can be accepted as correctly identified (and enables *nitidus* to be correctly placed).

Phorocera acutangulata Macquart, 1848 : 208 (48). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Phorocera acutangulata ♂. nov.sp."; it is in very bad condition, body dirty and with some mould, both mid legs and left fore and hind legs lost, scutal chaetotaxy rubbed off, right wing and apical half of left wing missing, abdomen distorted basally.

Phorocera biserialis Macquart, 1847 : 89 (73). Lectotype ♂, by fixation of Townsend (1940 : 158), TASMANIA: BMNH, London (ex coll. Bigot).

The lectotype bears Macquart's label "Phorocera biserialis n.sp. Macq." and is in fair condition; the antennae and palpi, the head setae, the left fore leg, parts of both mid legs and most of the right hind tarsus are lost.

Macquart described this species from both sexes, but no original female material has been found and is certainly lost. Only one male syntype was present in Bigot's collection when examined by Brauer (1897 : 347), and this specimen was referred to by Townsend (1940 : 158) as "Ht male"; as this statement restricts the name to one recognizable specimen I accept it as valid lectotype fixation. The lectotype has been accordingly labelled.

Phorocera cilipes Macquart, 1847 : 88 (72). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Phorocera cilipes. ♂. n.sp. Macq." and is in fair condition; the right antenna, left mid leg and right hind leg are missing, scutum and scutellum damaged, wings torn, and the abdomen slightly greasy; the head (believed correctly associated) is detached from the cervical region and glued to the anterior edge of the prescutum.

Macquart (1848 : 209 (49)) later briefly described the supposed ♀ of *cilipes* from a specimen from 'Nouvelle-Hollande' in Fairmaire's collection; this specimen has not been found and is almost certainly lost.

Phorocera flavipalpis Macquart, 1855 : 122 (102). Holotype ♀ [publ. as '♂', labelled as '♀'], NEW SOUTH WALES, Sydney: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Phorocera flavipalpis ♀. Macq. n.sp. Sydney" and is in poor condition; the body is dirty, right fore leg and both mid legs and the antennae are lost, the wings damaged and thoracic dorsum rubbed.

Though published as ♂ the holotype is actually ♀, as Macquart noted on his original label, and as noted by Brauer (1897 : 345).

Phorocera graciliseta Macquart, 1847 : 88 (72). Holotype ♂, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Phorocera graciliseta. ♂. n.sp. Macq." and is in very bad condition; specimen covered in mould, right mid and hind legs, left fore tarsus and apices of other left tarsi lost, right wing and apical half of left wing missing, hole in scutellum.

A specimen (♂) of this species from "Tasmania" was found standing unnamed in Bigot's collection when this was incorporated into BMNH collection, and has no type-status.

Phorocera grandis Macquart, 1851 : 171 (198). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande, côte orientale': probably New South Wales or Queensland): MNHN, Paris (No. 2284).

The holotype bears Macquart's label "Phorocera grandis. ♂. Macq. n.sp. n.holl." and an accession label "2 47"; it is in fair condition, but head crushed dorsally with some setae and apical part of left third antennal segment missing, both mid legs lost, thorax badly distorted ventrally at pin emergence site, generally slightly dirty.

Standing in MNHN collection with the holotype is a small ♀ specimen with the same "2 47" accession reference as the holotype, and lacking the head; the specimen was not mentioned in the original description, is much smaller than the size measurement given for the ♂, and is certainly not an original syntype.

Phorocera hyalipennis Macquart, 1851 : 170 (197). Holotype ♀, JAVA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Phorocera hyalipennis ♀. Macq. n.sp." and is in fairly good condition except for loss of left fore and mid legs and holes in scutum and left sternopleural region; the head is in exceptionally good condition.

Phorocera hyalipennis Macquart, 1855 : 122 (102). ? holotype or syntypes ♂, SOUTH AUSTRALIA, Adelaide ('Nouvelle-Hollande; colonie d'Adélaïde'): not located, presumed lost.

Macquart gave no indication of the source of his material of this species in the original description, but it is known from Macquart's (1855 : 25 (5)) introduction to the 5ᵉ *Supplément* of *Diptères exotiques* that the material he described from the "colonie d'Adélaïde" formed part of Bigot's collection. Brauer (1897 : 346) saw the ♂ holotype of *Phorocera hyalipennis* Macquart, 1855 [not Macquart, 1851] and noted that it stood in Bigot's collection with a "? Java" locality label by Bigot, and also that it lacked the abdomen. The ♂ holotype should therefore be present in Bigot's collection, but in spite of careful search of Bigot's material while incorporating it into the BMNH collection I have been unable to find it, and believe that it must be lost.

Phorocera hyalipennis Macquart, 1855, is a junior primary homonym of *P. hyalipennis* Macquart, 1851 (above) but as the former name remains completely enigmatic because of loss of the holotype I am not proposing any replacement name at this time.

Phorocera javana Macquart, 1851 : 170 (197). Holotype ♀, JAVA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Phorocera javana. ♀ Macq. n.sp." and is in fair condition except for loss of left fore leg and left mid tarsus, rubbing of mid dorsum of scutum, smashed scutellum and mould on abdominal venter and left hind leg.

Phorocera lateralis Macquart, 1846 : 293 (165). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2286).

The lectotype bears Macquart's label "Phorocera lateralis Macq. n.sp." and an accession label "13 44"; the condition is poor, very dirty and wings coated with dirt, head much distorted with facial regions and eyes pushed in and twisted on neck so that mouthparts are upwards.

Macquart described this species from both sexes, but no original female material has been found and is presumed to be lost.

Standing in MNHN collection with the lectotype is a second specimen which might possibly be an original male syntype, but as it is a Sarcophagid in filthy condition (with body tagmata reunited by glue) which does not satisfactorily fit Macquart's description, it is thought probable that it was added later in error and therefore that it has no type-status.

Phorocera maculata Macquart, 1851 : 173 (200). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande côte orientale': probably New South Wales): MNHN, Paris (No. 2285).

The holotype bears Macquart's label "Phorocera maculata ♂. Macq. n.sp. n.holl." and an accession label "4 46"; it is in very bad condition, largely coated with a gummy filth, both antennae and left mid leg missing, most of right hind leg lost, large hole in right base of abdomen and hypopygium lost.

Phorocera mucrocornis Macquart, 1851 : 174 (201). Holotype ♀, TASMANIA: MNHN, Paris (No. 2289).

The holotype bears Macquart's label "Phorocera mucrocornis. ♀. Macq. n.sp. Tasm." and an accession label "3 47"; it is in extremely bad condition, thickly and completely coated with mould and filth (which, although the structure is more or less complete, makes it almost impossible to distinguish the features).

Phorocera ornata Macquart, 1851 : 172 (199). LECTOTYPE ♂, by present designation, 'TASMANIE' [more probably New South Wales, see annotation]: MNHN, Paris (No. 2291).

Paralectotypes: 1 ♂, 2 ♀, same data as lectotype (MNHN).

The specimen selected as lectotype, though ♂, bears Macquart's label "Phorocera ornata. ♀. Macq. n.sp. Tasm." and an accession label "4 46"; it is in fair condition, some mould, right hind leg lost, some deposit on the head. All the paralectotypes also have the accession reference label "4 46", and the ♂ paralectotype is in extremely bad condition, being completely concealed in a dirty deposit.

Macquart cited only the ♀ in the original description, but as the sexes are superficially very alike and easily confused in this species, and as all the four specimens of both sexes in MNHN collection have the same accession reference, they are all considered to be original syntypes.

It is possible that New South Wales and not Tasmania is the true provenance of the type-material, as this is one of the Macquart species with MNHN accession reference "4 46" for which later specimens have not yet been found in Tasmania, though well known from Australia.

Phorocera scutellata Macquart, 1846 : 293 (165). Holotype ♂, TASMANIA: MNHN, Paris (No. 2287).

The holotype bears Macquart's label "Phorocera scutellata. ♂. Macq. n.sp." and an accession label "13 44"; it is in fair condition, head reattached (but presumed correctly associated), one antenna and arista of other antenna, left fore leg, right fore tarsus and right mid leg lost, thorax damaged.

Standing with the holotype in MNHN is a mis-associated ♂ specimen that has no type-status, and does not fit the original description.

Phorocera subpubescens Macquart, 1851 : 172 (199). Holotype ♀ [not ♂], 'TASMANIE' [probably in error for New South Wales]: MNHN, Paris (No. 2290).

The holotype bears Macquart's label "Phorocera subpubescens. ♂. Macq. n.sp.", an accession label "4 46" and a rectangular white label reading "47"; it is in fair condition, but left mid and hind legs lost, frontal setae rubbed off, dorsum of thorax smashed.

The holotype is ♀ but has a somewhat ♂-like facies, and this probably accounts for Macquart mistaking the sex and publishing it (as well as labelling the specimen) as ♂.

Phorocera tessellata Macquart, 1846 : 293 (165). Holotype ♂, TASMANIA: MNHN, Paris (No. 2288).

The holotype bears Macquart's label "Phorocera tessellata. ♂. Macq. n.sp." and an accession label "13 44"; it is in fair condition only, extremely dirty, left hind leg lost, head crushed in at antennal bases.

Standing with the holotype in MNHN are two correctly associated ♂ specimens, which are later-determined material and not type-material (as confirmed by their labelling); they bear accession labels "2 47" and "3 47" respectively, and the latter-labelled specimen also bears Macquart's determination label "Phorocera tessellata. Macq. 1. supp. Tasm.".

The BMNH, London, collection contains one ♂ specimen (labelled as from Tasmania and ex Bigot's collection) which has an identification label "Phorocera tessellata ♂. Macq." in Macquart's writing and appears to be correctly named.

Platytainia maculata Macquart, 1851 : 179 (206). Holotype ♀, Tasmania: MNHN, Paris (No. 2302).

The holotype bears Macquart's label "Platytainia maculata. ♀. Macq. n.g., nov.sp. Tasm.", an accession label "3 47" and a rectangular white label reading "48."; it is in bad condition, head lost, left mid leg missing, body greasy.

Townsend (1936 : 232, 1939*a* : 373) also noted that the head of the holotype is lost. This fact makes it particularly difficult to place the genus *Platytainia* Macquart, of which *maculata* is type-species, and at present the genus is enigmatic.

Polychaeta nigra Macquart, 1851 : 154 (181). Holotype ♀, Tasmania: MNHN, Paris (No. 2269).

The holotype bears Macquart's label "Polychaeta nigra. ♀ Macq. n.g., n.sp. Tasm." and an accession label "3 47", and is in fair condition; much mould, head coated in grimy deposit, right mid leg lost, some thoracic bristling rubbed (Townsend, 1932 : 50, described the head as "covered with mycelia and grime").

Prosena dispar Macquart, 1851 : 203 (230). LECTOTYPE ♀, by present designation, 'Tasmanie' [probably in error for New South Wales]: MNHN, Paris (No. 2352).

Paralectotype: 1 ♀, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Prosena dispar. ♀. Macq. n.sp." and an accession label "4 46"; it is in fair condition, head slightly crushed, thorax dirty, scutum damaged, and left mid leg lost.

The paralectotype ♀ also has the "4 46" accession label, and is probably correctly associated with the lectotype, although it differs slightly in abdominal colour and in colouring of the pleural and humeral hair.

This is one of the species for which the stated provenance of Tasmania is suspect, and for which New South Wales is a more probable locality of origin.

Prosena dorsalis Macquart, 1847 : 97 (81). Holotype ♂, Tasmania: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Prosena dorsalis. ♂ n.sp. Macq." and (except for the good head) is in bad condition; both mid and both hind legs are lost, apical halves of wings lost, body greasy and chaetotaxy partially rubbed off.

Prosena rufiventris Macquart, 1847 : 96 (80). Holotype ♀, Tasmania: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Prosena rufiventris. ♀ n.sp. Macq." and is in poor condition; antennae and frontal chaetotaxy lost, right mid and hind legs lost, left mid tarsus lost, only basitarsi remaining of fore legs and left hind leg, thorax greased and dorsum rubbed, abdominal chaetotaxy lost.

Prosena vittata Macquart, 1843 : 249 (92). Holotype ♀, New South Wales, Sydney ('Port Jackson'): MNHN, Paris (No. 2351).

The holotype bears Macquart's label "Prosena vittata Guer. nov.sp.", a circular label reading "Guerin/Menne-/ville" in mauve print and a rectangular label reading "Prosena vittata guer" in pencil and "Ports jacks" [i.e. Port Jackson] in faded ink.

The specimen which Macquart described as *Prosena vittata* is also, by a curious error made by Macquart, the holotype of *Prosena vittata* Guérin-Méneville, 1838. It appears certain that

Macquart overlooked the fact that Guérin-Méneville (1838 : 299) had already described *P. vittata*, and clearly he thought that he was describing the species for the first time (for he suggested that it might be the female of *P. conica* Guérin-Méneville, of whose description he was aware, and also because he cites "Guer." on his own original label). The two specimens (holotypes) of *P. vittata* and *P. conica* are both from Port Jackson and are mounted exactly similarly on the same type of unusual short thick pin and are similarly labelled (except for Macquart's label on *vittata*), and undoubtedly the specimen of *vittata* is the holotype of *Prosena vittata* Guérin-Méneville. Hence it follows that Macquart in fact redescribed *P. vittata* from Guérin-Méneville's holotype, and *P. vittata* Macquart is therefore a junior objective synonym and a junior primary homonym of *P. vittata* Guérin-Meneville.

The holotype of *P. vittata* Macquart (= holotype of *P. vittata* Guérin-Méneville) is in poor condition, dirty, abdomen (except for T1+2) lost, right mid leg and both hind legs lost, left hind tarsus lost, thorax damaged by very large pin (both wings are, however, complete).

Rutilia analoga Macquart, 1851 : 191 (218). Holotype ♀ [publ. as ♂], 'TASMANIE' [probably in error for New South Wales]: MNHN, Paris (No. 2322).

The holotype bears Macquart's label "Rutilia analoga ♀. Macq. n.sp.?", and an accession label "4 46", and is in very good condition.

The sex was published as ♂ in the original description, but is actually ♀ as Macquart indicated on his original label cited above. This is one of the species for which the published provenance of Tasmania is almost certainly wrong, and for which New South Wales is probably the true provenance.

Rutilia angustecarinata Macquart, 1848 : 211 (51). ? holotype or syntypes ♂, JAVA: not located, possibly lost.

Macquart stated that this was described "De Java. Collection de M. Payen". I have been unable to locate the type-material of *angustecarinata* and it is possibly lost.

Rutilia assimilis Macquart, 1851 : 192 (219). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2317).

Paralectotypes: 2 ♀, same data as lectotype (MNHN); 1 spec. (sex ?), same data as lectotype (MHN, Lille, box G.19 of Macquart's coll. and with number "379").

The lectotype bears Macquart's label "Rutilia assimilis ♂♀. Macq. n.sp." and an accession label, "4 46", and is in good condition except for loss of both third antennal segments and the right hind leg. The ♀ paralectotypes in MNHN bear the same "4 46" accession reference and are conspecific with the lectotype.

Macquart cited "Nouvelle-Hollande, côte orientale et Tasmanie" as the provenance of the type-material, but none of the specimens now in MNHN have the "2 47" accession reference which refers to material from the "côte orientale" of Australia, and all have the "4 46" reference for which the locality is recorded as Tasmania. Because of this, combined with the fact that *R. assimilis* is common in Tasmania, the lectotype and paralectotype type-locality is here accepted as Tasmania.

Townsend's (1938 : 419) statement of "Ht male – Origin, east coast Australia; location, Lille or lost" has no validity as a fixation of lectotype, because it is based on a mere guess about the types, their origin and locations; he evidently did not see the material in Paris (which Macquart cited as the depository) and there is no specimen now in MNHN, Paris, with a reference number indicating an east Australian origin. Present designation of a lectotype is therefore necessary.

The "type" is not in the Vienna Museum, as Paramonov (1968 : 375) wrongly stated.

[*Rutilia dubia* Macquart, 1846 : 311 (183). Not Tachinidae: belongs in Calliphoridae, tribe Rhiniini, synonym of *Thelychaeta viridaurea* (Wiedemann), synonymy established by Peris (1952 : 158) and here confirmed (holotype ♂ in BMNH, London, examined).]

Rutilia elegans Macquart, 1846 : 309 (181). Holotype ♂, NEW SOUTH WALES, Sydney ('l'île Sydney'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Rutilia elegans. ♂. Macq. n.sp." which is gummed to another label from Bigot's collection with the additional words "Sidney" and "nom par.

Macq" in Bigot's writing: the holotype is in fair condition, left mid tarsus and both hind legs missing, scutum damaged, abdomen glued to thorax and damaged at right side of base.

The holotype of this species was incorporated into BMNH, London, collection in 1904, and has a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904" on which Austen has added "Sydney, New South Wales." in pencil.

Rutilia flavipennis Macquart, 1848 : 210 (50). ? holotype or syntypes ♂, JAVA: not located, possibly lost.

Macquart stated that this was described "De Java. Collection de M. Payen". I have been unable to locate the type-material of *flavipennis* and it is possibly lost.

Rutilia fulgida Macquart, 1846 : 308 (180). LECTOTYPE ♂, by present designation, NEW SOUTH WALES, Sydney ('De l'Océanie, île Sydney'): BMNH, London (ex coll. Bigot).

Paralectotypes: 3 ♂, same data as lectotype (BMNH).

The lectotype bears Macquart's label "Rutilia fulgida ♂. Macq. n.sp" which is gummed to another label from Bigot's collection with the additional words "Sidney." and "nomm. par. Macq." in Bigot's writing; the lectotype is in good condition, except for loss of the tips of both antennae. The ♂ paralectotypes are conspecific with the lectotype, also in good condition except that the right wing of two of them is damaged.

The syntypes of this species were incorporated into BMNH, London, collection in 1904, and each has a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "Sydney, New South Wales." in pencil.

Rutilia fuscotestacea Macquart, 1846 : 306 (178). Holotype ♀, NEW SOUTH WALES, Sydney ('De l'Océanie, île Sydney'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Lucilia [*sic, lapsus*] fuscotestacea ♀. Macq. n.sp." which is gummed to another label from Bigot's collection with the additional words "Sydney" and "Nomm. par. Macq." in Bigot's writing; it is in good condition except for loss of a few tarsal segments and a few thoracic setae.

The holotype of this species was incorporated into BMNH, London, collection in 1904, and has a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "Sydney, New South Wales." in pencil.

Standing under this name in BMNH, with the holotype, are seven ♀ specimens, each with a label reading "Australia" in pencil in Austen's writing and "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." in print, but none of these are types; six of them stood in Bigot's collection as later identified material of *Rutilia viridinigra* Macquart, and the remaining one stood in Bigot's collection as a later identified specimen of *R. fuscotestacea*; this last specimen, and two of the other six, have pencilled annotation labels by Austen to this effect.

The holotype of this species is the only primary type of a Tachinid described by Macquart (apart from *Masicera varipes*, q.v.) which, so far as I know, has a different generic name on Macquart's original label from that in the binomen published by him; the word "Lucilia" on the label in this case is an obvious mistake.

Rutilia media Macquart, 1846 : 310 (182). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2319).

Paralectotypes: 2 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Rutilia media. ♂. Macq. n.sp." but has no accession label; it is in very good condition, except for loss of right mid leg, and slight denting of left side of head. The ♂ paralectotypes are correctly associated with the lectotype, and also lack accession labels.

Standing in MNHN collection with the type-material is a later added ♂ specimen bearing Macquart's determination label "Rutilia media ♂. Macq. supp." and an accession label "1 46", and also one ♀ specimen with a printed label reading "Tasmanie" which has also clearly been added to the collection at a later date from the original material (Macquart did not describe the female and the specimen is not a syntype).

Rutilia minor Macquart, 1846 : 310 (182). LECTOTYPE ♂, by present designation, TASMANIA: MNHN, Paris (No. 2320).

Paralectotypes: 1 ♂, 2 ♀, same data as lectotype (MNHN); 1 ♂, NEW SOUTH WALES, Sydney (BMNH, ex coll. Bigot); 2 specimens (? sex), TASMANIA ('van Diemen') (MHN, Lille, box G.19 of Macquart's coll.).

The lectotype bears Macquart's label "Rutilia minor. ♂. Macq. n.sp." and an accession label "13 44"; the right fore and right mid legs are lost and the thoracic dorsum slightly crushed, but the condition is otherwise very good with all hairing and bristling especially well preserved. The paralectotypes are believed to be correctly associated with the lectotype (though legs of the females are red and those of males black, and it is not yet completely proven that this sexual dimorphism exists in the one species), and those in MNHN have the same "13 44" Tasmanian accession reference as the lectotype.

The ♂ paralectotype in BMNH is certainly an original syntype, as it bears Macquart's original label "Rutilia minor. ♂. Macq. n.sp."; this label is gummed to another label from Bigot's collection with the additional words "Syney" [= *lapsus* for Sydney], "nom. par. Macq." and "♂ & ♀." in Bigot's writing (the sex symbols clearly refer to the fact that *minor* was described from both sexes); in addition it has a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904", which refers to the date of its incorporation into BMNH collection in 1904, and on this label is the extra word "Australia" in pencil in Austen's hand.

Standing in BMNH, London, collection with the paralectotype specimen there is a second ♂ specimen (headless and in bad condition) which was identified later by Macquart and bears his determination label "Rutilia minor. ♀ Macq." (sex sign in error) gummed to a Bigot label on which Bigot has written "nomm. par. Macq. V.Diemen" (this bears also the same type of printed Verrall presentation label as the paralectotype, and on this is the word "Tasmania" in pencil by Austen).

Standing in MNHN, Paris, collection with the four syntypes (i.e. lectotype and three paralectotypes) are five other specimens, which, from their accession date labels and Macquart's later determination labels, are provenly later added material and not type-material. These consist of one ♂ and three ♀ specimens with accession labels "3 47" (the ♂ and two of the females also with Macquart determination labels), and of one other ♂ in very bad condition which has a "4 46" accession label and a Macquart determination label.

Box G.19 of Macquart's collection in MHN, Lille, contains two specimens from Tasmania which are believed to be original syntypes; they have not been seen by me, and their sex is unknown at present.

Townsend (1932 : 39, 1938 : 417) cited a female "Ht" (= holotype) from Tasmania in Paris Museum, but as there are two such females (syntypes) and no means of knowing to which specimen Townsend's statement refers this cannot be accepted as valid lectotype fixation. As it is not a valid fixation, and also as it is undesirable to have a restriction of the name to the female sex, I have here designated a male syntype to be the lectotype.

Rutilia nigra Macquart, 1846 : 305 (177). Unavailable *nomen nudum*, cited in the original description of *Rutilia pellucens* Macquart, 1846.

Following the description of *R. pellucens*, Macquart wrote "Il serait possible que l'individu décrit fut le mâle du *R. nigra*; mais jusqu'à de plus amples observations, nous devons les considérer comme espèces distinctes" and this is the only place in the works of Macquart where the name *R. nigra* appears. The description of the male of *pellucens* cannot be held to apply to *nigra*, and the latter name is therefore a *nomen nudum*; Brauer (1899 : 513) cited the name but did not make it available.

The BMNH, London, collection contains two male specimens (standing under the name of, and apparently belonging correctly to, *Rutilia regalis* Guérin-Méneville) which were found by Austen to be standing above the name "Rutilia nigra" in Bigot's collection of Rutiliini when this was incorporated into BMNH in 1904. One of these specimens bears a label "Rutilia nigra n.sp." in Macquart's handwriting, which is gummed to another label from Bigot's collection on which Bigot has written "♂. N.holl. (Coll. Fairmaire) Macq. D.la Nom"; a folded note is also attached to this specimen in the small pencil writing of Austen which reads "*N.B.* – The above two ♂s were, in the Bigot collection, placed above the appended label [i.e. Macquart's original label attached to Bigot's label] in Macquart's handwriting, which is mounted on another label, with notes by Bigot. The specimens are referred to by Brauer, Stz. K. Akad. Wiss. Math.-naturw. Cl., CVIII., Abth. I. (1899). p. 513 (bottom of page); but the species appears never to have been described, & the name is consequently a MS one. E.E. Austen, 27.x.04.". (Austen evidently did not spot the name *R. nigra* published in the description of *pellucens*.) The specimen with Macquart's and with Austen's labels and the second specimen each have a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904" with the pencilled word "Australia" in Austen's writing. No ♀ specimen has been seen which is labelled as "nigra" by Macquart, although his statement quoted above from the description of *pellucens* implies that he had a ♀ which he regarded as "nigra"; possibly this was in Fairmaire's collection, of which the Diptera appear to be lost (as in the case of the ♂ holotype of *pellucens* itself, q.v.).

Rutilia nigrithorax Macquart, 1851 : 190 (217). LECTOTYPE ♂, by present designation, AUSTRALIA (publ. as 'De l'Océanie'): MNHN, Paris (No. 2316).

Paralectotypes: 4 ♂, same data as lectotype (MNHN); 1 ♀, AUSTRALIA, east coast (MNHN).

The lectotype bears Macquart's label "Rutilia nigrithorax ♂♀. [latter symbol cancelled by stroke] Macq. n.sp." and an accession label "4 46", and is in good condition except for loss of both third antennal segments; selected as lectotype despite loss of third antennal segments because it is otherwise by far the best specimen, and antennae can be seen complete on the paralectotypes. All the paralectotypes appear to be conspecific with the lectotype and the males have the same "4 46" accession reference; the ♀ paralectotype has an original Macquart label "Rutilia nigrithorax ♀. Macq. n.sp.", an accession label "2 47", and a rectangular white label reading "1142" in faded ink.

This is the species which Paramonov (1968) made type-species of his genus *Ola* Paramonov, and it is known from south-eastern Australia, from Tasmania to New South Wales; Macquart cited the locality as Oceania, but this clearly must refer to Australia, and this is confirmed by the ♀ syntype (listed under paralectotypes above) which has the "2 47" reference alluding to the east coast of "New Holland".

Rutilia nitens Macquart, 1851 : 189 (216). Holotype ♀, INDIA: MNHN, Paris (No. 673).

The holotype bears Macquart's label "Rutilia nitens. ♀ Macq. n.sp." and an incompletely legible accession label with (apparently) the numbers "301" followed by two completely unreadable numbers; the condition is very poor, specimen mouldy and dirty, facial regions damaged, left mid leg and right hind leg lost, left fore tibia and tarsus missing, parts of right mid and left hind tarsi also missing, thorax cracked, wings damaged.

Rutilia oblonga Macquart, 1847 : 92 (76). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Rutilia oblonga. ♂ n.sp. Macq" which is gummed to another label from Bigot's collection with the additional words "Diaphan [this struck through for deletion] (*Diaphania*) N. holland." in Bigot's writing. The condition is fair, some dirtiness, left fore leg lost, right mid tarsus and part of left mid tarsus lost, some chaetotaxy lost, abdomen slightly rubbed.

Rutilia pellucens Macquart, 1846 : 305 (177). Holotype ♂, AUSTRALIA ('Nouvelle-Hollande'): not located, presumed lost.

This species was described from one specimen (this is known from Macquart's statement of "l'individu" in the singular) stated by Macquart to be in Fairmaire's collection; the Diptera from this collection are believed to be lost. However, the BMNH, London, contains five male specimens of *R. pellucens* from Bigot's collection which were identified by Macquart, and one of which has a determination label in Macquart's writing "Rutilia pellucens Macq" gummed to another label from Bigot's collection on which Bigot has added "♂ Macq. nomit v. id. D. Exot. Australia"; these specimens were incorporated in BMNH in 1904 and each has printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "Australia" in pencil.

The specimens from Bigot's collection which were identified as *pellucens* by Macquart fit his description perfectly, and, in the absence of the lost holotype, serve to confirm the identity of *pellucens* correctly. There are no specimens of *pellucens* in MNHN Macquart collection.

Rutilia plumicornis Macquart, 1843 : 239 (82). Holotype ♂, NEW GUINEA, Fak-Fak ('Offak'): lost (but see annotation below).

Macquart, in the original description, attributed this name to Guérin-Méneville and based the description on a specimen from "Offak" (in Papua or New Guinea) sent to him by Guérin-Méneville. In his next publication, however, i.e. the *1e Supplément* to *Diptères exotiques*, Macquart (1846 : 302 (174)) wrote that "L'espèce que nous avons précédemment décrite sous le nom de *R. plumicornis* est la même que la *R. mirabilis*, Guérin, voyage autour du monde de *la Coquille*", and this statement—apart from definitely implying the synonymy of the names—might possibly imply that by some error the descriptions of both nominal species were based on the same specimen.

Guérin-Méneville's name *mirabilis* is also based on a specimen (holotype), which still exists in MNHN, Paris, from Offak, and the name is available from publication of a plate-figure in 1831, though a text description did not appear until the account of the voyage of *La Coquille* was published in 1838. It appears very likely, since Macquart and Guérin-Méneville were closely acquainted, that the specimen that Macquart received from Guérin-Méneville and described as *plumicornis* was the very same specimen that Guérin-Méneville had already described as *mirabilis*, but that Macquart did not realize at the time (1843) when he described *plumicornis* that a name had already been published for the species involved. If this supposition is true, then the extant type-specimen (believed to be holotype) of *mirabilis* is also the holotype of *plumicornis*. However, there is no means of proving this since the *mirabilis* type does not bear any label in Macquart's hand, and it is equally possible that there were originally at least two specimens from Offak of which Guérin-Méneville described one (*mirabilis*) and Macquart another (*plumicornis*), with subsequent loss of all but one specimen. It is considered best to regard the type-material of *plumicornis* as lost, though bearing in mind the possibility that it might actually be represented by the topotypic holotype of *mirabilis*. No practical question of nomenclature is involved, as *plumicornis* is unquestionably a synonym of *mirabilis*, as Macquart himself established in 1846.

Rutilia rubriceps Macquart, 1847 : 92 (76). Holotype ♀, 'TASMANIE' [probably in error, see annotation]: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Rutilia rubriceps. ♀ n.sp. Macq." which is gummed to another label from Bigot's collection on which the words "nomm. par Macq. V.id. D. Exot. Van Diemen" have been added by Bigot; the holotype is in very good condition, except for the loss of the left fore tarsus and tip of left hind tarsus.

The holotype of this species was incorporated into BMNH, London, collection in 1904, and, in addition to Macquart's label, it bears a pencilled label in Austen's writing "Tasmania. Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904.". Standing with the holotype in Bigot's collection, and now in BMNH, is a male specimen of *rubriceps* which bears the same type of pencilled label in Austen's hand, but this specimen was evidently not seen by Macquart and is not a type-specimen.

There is doubt about the provenance of the holotype (and also of the ♂ specimen from Bigot's collection), because *rubriceps* appears to be a mainland Australian species best known from Queensland; no subsequent material has been seen from Tasmania, and this stated type-locality might be in error.

Rutilia setosa Macquart, 1847 : 94 (78). Syntypes ♀, 'TASMANIE': lost (see annotation).

Macquart described this species from female specimens which he recorded as being in Bigot's collection from Tasmania ("De la Tasmanie. M. Bigot"). At the same time he explained that he had previously thought that these females belonged to another of his species, *Rutilia testacea* (Macquart), but that now (having seen the true females of *testacea*) it was clear that the females having the arista bare and a row of 8–12 strong setae on the middle hind margin of the second abdominal segment were not *testacea* (as he had recorded earlier: Macquart, 1846 : 305 (177)), but the new species *setosa*; hence the statement "Rutilia testacea ♀. Macq." cited beneath the name "Rutilia setosa, *Nob.*" heading the original description of *setosa*.

Unfortunately no female specimens of Rutiliini now exist from Bigot's collection (in BMNH, London) which fit with Macquart's description of *R. setosa*, nor are there any specimens labelled by Macquart as either *setosa* or *testacea* (although there are correctly identified males of the latter species from Bigot's collection in BMNH). It must be concluded that the type-material of *R. setosa*, which consisted of female syntypes, is lost. (The evidence that it consisted of syntypes comes from Macquart's statement under the heading *R. testacea*, following the original description of *R. setosa*, that "Nous croyons qu'elles [i.e. true *testacea* females] sont les femelles du *R. Testacea*, et que celles que nous avions considérées comme telles, et qui appartiennent à une espèce nouvelle, a là *setosa*".)

In the earlier Macquart (1846 : 305 (177)) work dealing with supposed females of *R. testacea* he appears to imply that the specimens are in Paris Museum, and the MNHN Macquart collection has therefore been checked for any specimens that could possibly be types of *R. setosa* (in case, for example, the statement of "M. Bigot" in the original description of *setosa* was an error for "Muséum"); however, there are no specimens in Paris that could be *setosa* types, which supports the conclusion above that the actual type-material is now lost.

Rutilia subtustomentosa Macquart, 1851 : 191 (218). Holotype ♂, Tasmania: MNHN, Paris (No. 2323).

The holotype bears Macquart's label "Rutilia subtustomentosa ♂. Macq. n.sp.", and an accession label "3 47", and is in perfect condition. It may be noted that the specific name is not hyphenated on Macquart's label, but was hyphenated in the original publication.

Rutilia viridinigra Macquart, 1846 : 307 (179). LECTOTYPE ♀, by present designation, Tasmania: MNHN, Paris (No. 2318).

Paralectotypes: 1 ♀, same data as lectotype (MNHN); 1 ♀, Tasmania or Australia (MNHN); 1 ♀, 'Sydney' (BMNH, ex coll. Bigot).

The lectotype bears Macquart's label "Rutilia viridinigra Macq. n.sp." and an accession label "13 44", and is in good condition except for loss of hind legs and some scutellar setae. One of the paralectotypes in MNHN has the same "13 44" accession reference as the lectotype, but the other has an accession label "229 35".

The ♀ paralectotype in BMNH from Bigot's collection is correctly associated with the lectotype, and bears an original Macquart label "Rutilia viridinigra ♀. Macq. n.sp" which is gummed to another label from Bigot's collection on which Bigot has added in his writing the words "Sydney" and "Nomm. par. Macq."; although in the original description Macquart only mentioned the locality "Tasmanie", this ♀ is nevertheless considered to be an original syntype because of the original Macquart label which it bears, and also because there is often doubt about the accuracy of Bigot's localities (the "Sydney" in his writing could be in error). Furthermore, as Macquart described the species from "plusieurs individus" it is possible that he did not record all the localities. The original Macquart label is accepted as conclusive evidence that the Bigot specimen is an original one.

Standing with the syntype series in MNHN, Paris, there is another ♀ specimen, but this has an accession label "4 46" and is not an original specimen; in the same collection there is a ♂ specimen with "4 46" accession reference, and this also is not part of the original material (it is probably the male which Macquart, 1851 : 192 (219) described later in the *4^e^ Supplément*). The BMNH collection contains one ♀ specimen received in exchange with Paris Museum in 1924 and bearing the "4 46" accession reference of that Museum; it has no type-status.

Rutilia viriditestacea Macquart, 1851 : 190 (217). LECTOTYPE ♂, by present designation, Tasmania: MNHN, Paris (No. 2321).

Paralectotype: 1 ♂, same data as lectotype (MNHN).

The lectotype bears Macquart's label "Rutilia viriditestacea. Macq. n.sp. ♂.", and an accession label "3 47", and is in very good condition (except for a few small holes in the thorax).

The paralectotype specimen is labelled "3 47" like the lectotype, but is incorrectly associated with the lectotype (having narrower frons, all dark thoracic hair, lacking bluish violet reflections).

Standing in MNHN collection with the syntype specimens there are two unlabelled and wrongly associated male specimens, which appear without doubt to have been added later to the collection; they have therefore no type-status.

Rutilia vittata Macquart, 1855 : 126 (106). Holotype ♀, SOUTH AUSTRALIA ('colonie d'Adélaïde'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Rutilia vittata ♀. Macq" and is in fair condition except for loss of both fore legs, right mid leg, and tips of hind tarsi, and damage to scutellum and right wing. Macquart's label lacks the usual "n.sp." inscription.

The holotype of this species was incorporated into BMNH, London, collection in 1904, and has a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "S.Australia." in pencil.

Senostoma variegata Macquart, 1847 : 96 (80). Holotype ♀, TASMANIA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Senostoma variegata. ♀ n.g., n.sp. Macq."; it is in very bad condition, both third antennal segments, both fore legs, right mid leg and left hind leg missing, body dirty and greasy, some chaetotaxy lost, hole in scutum and scutellar base.

Townsend (1932 : 40, 1938 : 426) referred to a specimen, which I have not seen, in the Naturhistorisches Museum, Vienna, as being the female holotype from Tasmania of *S. variegata*, and (in the 1932 paper) stated that it is labelled "variegata Macq. Type Bigot". This is almost certainly a label attached to a specimen by Brauer, and cannot signify the true type of Macquart, which (as shown above) bears Macquart's own label and is still correctly present among Bigot's material in BMNH, London. Brauer's meaning of the word "Type" is undoubtedly different from present usage, and it is quite certain that the specimen in Vienna recorded by Townsend is both wrongly identified and not a type of *Senostoma variegata*. *S. variegata* is type-species of *Senostoma* Macquart and Macquart's original label on the holotype bears the formula "n.g." as well as "n.sp.". For many years the generic name *Senostoma* was mis-applied to a genus of Rutiliini, but *Senostoma* although belonging in the subfamily Proseninae is not a Rutiliine, and Paramonov (1968 : 384) has recently and rightly drawn attention to this.

Sumpigaster fasciatus Macquart, 1855 : 125 (105). Holotype ♂, QUEENSLAND, Moreton Bay: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Sumpigaster fasciatus ♂. n.g., n.sp. Macq"; it is in extremely bad condition, body largely concealed (less so on abdomen) in mould, all legs lost except left hind leg, eyes partially collapsed, some chaetotaxy (including all scutellar bristles) lost.

Macquart published the locality as "De l'Océanie. Moreton-Bay.".

Tachina cilipes Macquart, 1843 : 219 (62). Holotype ♂, EAST INDIES (*Marc*): MNHN, Paris (No. 672).

The holotype bears an original label in Macquart's writing reading "No. 18 Tachina cilipes", and an accession label "1196 36"; it is in poor condition, head glued to thorax (but certainly correctly associated), body dirty, chaetotaxy of frons, mesonotum and scutellum rubbed off, right third antennal segment and the left fore and right mid legs missing.

Tachina javana Macquart, 1851 : 177 (204). Holotype ♂, JAVA: BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Tachina javana ♂, Macq. n.sp." and is in good condition except for loss of right third antennal segment and left mid leg, small hole in scutum and loss of a few setae.

Standing with the holotype in BMNH there are two other ♂ specimens from the Bigot collection, but as there is no definite evidence that Macquart saw these specimens they are excluded from the type-series.

This name is here considered *not* to be a homonym of *Tachina iavana* Wiedemann, 1819, even though both names allude to Java, because the "i" and the "j" difference is not one of the cases of variable spelling covered by Article 53 of the *International Code of Zoological Nomenclature, 1961*, but undoubtedly the names ought to be considered homonyms by the spirit, if not the letter, of this Article.

Teretrophora fasciata Macquart, 1851 : 175 (202). Holotype ♀, TASMANIA: MNHN, Paris (No. 2292).

The holotype bears Macquart's label "Teretrophora fasciata. ♀ Macq. n.g., n.sp. Tasm." and an accession label "3 47"; it is in appalling condition, mounted very near head of very long pin and completely coated in and obscured by brittle deposit and mould, with legs stuck down to body, the features only discernible with greatest difficulty; legs appear to be almost complete, though tips of several tarsi missing. Townsend (1932 : 48) described the holotype as "covered with mycelia and grime".

This is type-species of *Teretrophora* Macquart, a genus which has remained enigmatic since its description. Fortunately, despite the condition, the holotype shows a very striking feature in the extraordinarily elongate and conical fifth tergite and elongate ovipositor, and it has now been possible to identify recently collected specimens from New South Wales which show this feature as *T. fasciata*, and to confirm other features on the holotype by prising off small pieces of the brittle deposit which invests the specimen. The type-locality is accepted as Tasmania as given by Macquart, but confirmation is required by future collecting of this species.

Toxocnemis vittata Macquart, 1855 : 124 (104). Holotype ♂, SOUTH AUSTRALIA ('Colonie d'Adélaïde'): BMNH, London (ex coll. Bigot).

The holotype bears Macquart's label "Toxocnemis vittata. ♂. Macq. n.g."; it is in good condition except for a thin covering of mould and loss of the right mid leg.

This is type-species of *Toxocnemis* Macquart and Macquart's original label bears the "n.g." formula indicating the new genus; the label, however, lacks the usual "n.sp." but this may be due to subsequent cutting off to reduce label size (for instance by Bigot, who appears at times to have reduced the size of some of Macquart's original labels).

Trichostylum rufipalpis Macquart, 1851 : 182 (209). Holotype ♀, AUSTRALIA ('Nouvelle-Hollande, côte orientale': probably New South Wales or Queensland): MNHN, Paris (No. 2306).

The holotype bears Macquart's label "Trichostylum rufipalpis. ♂ n.g., n.sp. Macq." and an accession label "2 47"; it is in fair condition, left side of head dirty, both fore legs and right mid leg lost, tips of remaining left tarsi lost, scutum slightly rubbed.

Tritaxys australis Macquart, 1847 : 82 (66). LECTOTYPE ♂, by present designation, TASMANIA: BMNH, London (ex coll. Bigot).

Paralectotypes: 1 ♂, 1 ♀, same data as lectotype (BMNH).

The type-material of this species consists of two male syntypes and one female syntype which were incorporated into the BMNH collection from Bigot's collection in 1904, and each syntype bears a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which the word "Tasmania" has been added by Austen in pencil, and each has also a circular yellow-edged "Co-type" label on which Austen has written "Tritaxys australis Macq." in ink; none of the specimens (though they are undoubtedly all original syntypes) has a label by Macquart although it is reasonable to assume that there was originally such a label but that this has been lost (*T. australis* appears to be the only Old World nominal species described by Macquart of which his original label is missing from the primary type).

The lectotype is in bad condition, body dirty with legs and abdomen partly invested in glue, both aristae and mid tarsi lost, left wing missing, hole in scutellum; the paralectotypes are also in very bad condition, and the female lacks the abdomen and third antennal segments, but the male paralectotype (though the head is dirty and much distorted) possesses both aristae.

Townsend (1941 : 75) referred to "Ht from Tasmania, in Newmarket" for *T. australis*, but as it is impossible to tell from this statement which sex and specimen Townsend was referring to there is no valid lectotype fixation; a lectotype is therefore here designated.

PART II—BIGOT

BIGOT'S WORK AND RECOGNITION OF HIS TYPE-MATERIAL

Jacques Marie Frangile Bigot was born in 1818 and died, after an attack of influenza, on 14th April 1893 at his country estate of Petit-Quincy (near Brunoy, Seine-et-Oise) on the southern outskirts of Paris ; here he had lived and worked most of his life, except when wintering in Algiers. Bigot's lifelong interest was in the Diptera ; at the age of 26 he became a member of the *Société entomologique de France*, and in the following year (1845) he published the first of his long series of papers on Diptera in the *Annales* (and associated *Bulletin des Séances*) of that Society.

Macquart (1848 : 161 (1)), at the time when Bigot was 30 years old, wrote of him as a young scholar who was a hope of French entomology, but it is fair to say that the promise shown by Bigot's early works was not maintained; he became a dilettante dipterist, toying with descriptive work at a very superficial level, and in the later years of his lifetime was criticized for this (an obituary notice in *The Entomologist's Monthly Magazine*, 1893, **29** : 145, records that "the quality of his work did not find favour amongst the students of that Order [Diptera], and did not escape severe criticism"). Osten Sacken (1904 : 232), who was long acquainted with Bigot, tells how he once told Bigot that his most useful work had been in accumulating a large collection of exotic Diptera and how it would be a gain for science if almost all of Bigot's publications could be suppressed: harsh though this judgement sounds, it does not lack justification, for without reference to the type-specimens it is virtually impossible to recognize any of the genera and species which Bigot described, though the collection assembled by Bigot (which contains his types) is invaluable.

Bigot formed his collection from specimens received from all parts of the world, but it became extremely rich in material from the Americas, and the species which he described from Mexico, Central and South America exceed in number those from all other parts of the world together. The importance of his collection was widely recognized, and when Bigot's death was announced on 26th April 1893 at a meeting of the *Société entomologique de France* (see *Bull. Soc. ent. Fr.* **1893** : clxxxvii) the President, Lefèvre, remarked that "La Collection de Bigot a une valeur scientifique de premier ordre, car elle contient un nombre considérable de *types*" and added the hope that the Muséum d'Histoire Naturelle in Paris would find the means to acquire the collection. Osten Sacken, too, urged the authorities of the Paris Museum to buy the Bigot collection, but they were unable or unwilling to offer the 8,000 francs which Bigot himself had fixed as the minimum sale price, and offered instead only 5,000 francs (see *Bull. Soc. ent. Fr.* **1893** : ccxx); in the absence of a sale to the Muséum d'Histoire Naturelle in Paris, the Bigot collection was bought, on the advice of Osten Sacken, by the English dipterist G. H. Verrall, for the 8,000 francs required by Bigot's heirs. Bigot's collection then came to Verrall's home at Newmarket, England, in June 1893; but Verrall gave Osten Sacken to understand that the collection would ultimately find its place in the British Museum (Osten Sacken, 1904 : 232).

Unfortunately it now appears unlikely that Verrall's apparent intentions about

Bigot's collection will be fulfilled, and improbable that all the collection will find its way to the British Museum (Natural History). Following on Verrall's death in 1911, the Bigot collection passed to his nephew, J. E. Collin, who continued to house most of it at Newmarket, but the collection has now become divided; in 1960 the Nematocera, Calyptrata and some Brachycera from the collection (approximately 6,000 specimens, BMNH registration no. B. M. 1960–539) were transferred by Collin from his possession to the British Museum (Natural History), where they will now remain, but the rest of Bigot's collection (which Collin did not transfer to the BMNH in 1960) passed to the Hope Department of Entomology, at the Oxford University Museum, when Collin died in 1968.

The very large part of Bigot's collection which came to the British Museum (Natural History) in 1960 is being gradually incorporated into the general Diptera collection of the Museum, but only after careful study of the specimens to ensure that their type status (if any) is correctly determined and after careful and appropriate labelling of each specimen. For the Tachinidae from Bigot's collection, all of which are in the BMNH, all the Old World specimens (including the types) have now been incorporated, and all of the type-specimens of New World forms.

The great importance of Bigot's collection lies in the fact that it contained not only the types of the large number of nominal species described by Bigot himself, but also the types of a very large number of species described by Macquart (1846–1855) in the *Suppléments* to his works on the *Diptères exotiques nouveaux ou peu connus* (in the case of the Tachinidae, such Macquart types are now incorporated in the British Museum (Natural History) collection). The specimens which Macquart described from Bigot's collection were loaned to him for study by Bigot, who was a young man just beginning to assemble his collection at the time when Macquart was publishing his *Suppléments* (Bigot was forty years younger than Macquart).

The recognition of Macquart's types in Bigot's collection has been considered earlier in Part I, and the following notes are concerned only with the recognition of the types of Bigot's own nominal species. Bigot was in every respect a much more casual worker than Macquart, and his type-specimens were not labelled to show their status (e.g. with "n.sp." or some equivalent), in the way that Macquart had labelled at least one specimen of his own type-series; indeed, the vast majority of Bigot's specimens stood in his collection (and still stand in those parts of the collection not yet incorporated into the BMNH general collection) without any labels at all on the specimens themselves. Bigot's method of indicating identity was to place a specific name label below the specimen(s) and a generic name label above, the standard labels being rectangular in form with a narrow black border, as shown in Plate 1, G and H. Specific labels are white, and generic labels yellow or pale yellow; the specific labels show the generic initial letter, the specific name (commencing normally with a capital letter), and the sex symbol towards the top, the type-locality on the bottom left and Bigot's name and "J." initial on the bottom right of the label (though some variations from this usual arrangement are found) (Plate 1, H); the generic labels show the letter "G." followed by the generic name at the centre of the label, and the generic author's name at the bottom right (Plate 1, G). The writing on the labels is in black ink in Bigot's own hand.

It is important to note here that some specimens from the New World in Bigot's collection (especially among the Tachinidae) carry a completely different kind of label from that described above, attached to the pin of the specimen. This second kind of label consists of a piece of white or blue paper bearing an inscription in Bigot's spidery handwriting in either purple or black ink. The information given on each label of this kind comprises a generic and specific name, a sex symbol (sometimes omitted), an inscription indicating an unpublished new species, a statement apparently indicating when Bigot acquired the specimen for his collection at Quincy, and a locality of origin. The inscription showing that the specimen was of an unpublished new species is always given on this kind of label as "n.sp. inedict." (= unpublished), and it seems clear that Bigot intended such labels to be temporary until the species concerned had been described. I at first thought that all names found on specimens labelled in this way were unpublished manuscript names, and therefore that none of the specimens involved could have any type-status, but I have now found that Bigot did in fact publish a few of the names in papers dealing with New World forms: a few of Bigot's types of Tachinidae from the Americas therefore carry the kind of "manuscript" label just described.

With the foregoing details about Bigot's labelling in mind it is normally possible to be certain that the type-material of his described species is correctly recognized, even though he labelled them so poorly and never as types. Often his published descriptions indicate the number of specimens he had available and holotype or syntype status is then easily determinable, and for those nominal species for which he did not indicate how many specimens he had it is usually possible to accept all specimens standing under the name as holotype or syntypes (except very occasionally when one or more specimens bears some unusual label indicating a different locality from that published for the type-material, when such specimens must be excluded from the type-series). It is important to note here that discrepancy between the actual sex of the types and the sex published by Bigot is common in Bigot's works, for, with all his experience as a dipterist, he was either notoriously unable to recognize sex accurately or very careless in recording it. The provenance of Bigot's type-specimens is normally only known to the country, only a few specimens having locality data which pinpoint the type-locality more accurately: in general, the localities cited by Bigot in publication and on his labels are—so far as they go—correct, but some errors clearly exist.

A part of Bigot's collection of Tachinidae was transferred from Newmarket to the British Museum (Natural History) in 1904, as the result (it is inferred) of a special arrangement made between Verrall and E. E. Austen. The accession register of the BMNH for the year 1904 records (under serial number 274) that G. H. Verrall presented 187 specimens of Australian and Austromalayan *Rutilia, Formosia* and allied genera to the Museum in October of that year; these specimens are still in BMNH and they represent all the Rutiliini and some other Prosenines that were in Bigot's collection. Each of the specimens that came to the BMNH collection in this consignment has a printed accession label which reads "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904. 1904–274.", and on each such label there is usually a locality indicated in pencil in Austen's writing. All of Bigot's Rutiliine types, and a few others, have such labels (in addition to Bigot's own labels from his collection), as indicated where appropriate in the account of Bigot's types that follows (but I have, in the latter, omitted the "1904–274" accession reference which occurs on the labels in the interest of brevity).

Specimens which Townsend in the *Manual of Myiology* (and also elsewhere in a few of his papers) records as in "Newmarket" are now to be found in the BMNH collection, following the presentation of the Tachinidae of Bigot's collection to the British Museum (Natural History) in 1960.

All Tachinid specimens from Bigot's collection (omitting those above mentioned that were received in 1904) that have already been incorporated into the general collection of the British Museum (Natural History)—which includes *all* of his Tachinid types—have been labelled with a printed label reading "ex. Bigot Coll: B.M. 1960–539." on which the name, sex, type-status (if any), and locality have been added in black ink. I have not thought it necessary to quote these recent incorporation labels in the information on Bigot's types which follows, since they all have the same standard form.

BIGOT'S TYPE-MATERIAL OF AUSTRALASIAN, ORIENTAL AND ETHIOPIAN TACHINIDAE

[Note: the following list includes in square brackets those nominal species which are *not* Tachinidae, but which might be assumed to belong to this family because of their original generic assignments by Bigot.]

Atractodexia argentifera Bigot, 1885*c* : xxxii. Holotype ♂, New Caledonia: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "A.argentifera. ♂. Nouv. Caledon. J.Bigot." and his yellow generic label reading "G.Atractodexia. J.Bigot."; it is in good condition except for loss of right fore leg and apex of left mid tarsus. The head has at some time been glued back to thorax.

Bogosia rufiventris Bigot, 1876 : 399. Holotype ♂, South Africa, Natal: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "B.Rufiventris. ♂. Natal. J.Bigot." and is in good condition except for loss of right mid leg and apices of some tarsi.

Chetogena tricolor Bigot, 1891 : 377. Holotype ♂, Ivory Coast, Assinie: not located, presumed lost.

I have been unable to find the holotype of *Chetogena tricolor* while incorporating Bigot's Tachinid collection into BMNH, and believe that it must be lost. In the absence of the type the generic position is completely uncertain, and there is even some doubt as to whether *C. tricolor* Bigot is a Tachinid.

Crossotocnema javana Bigot, 1885*e* : ccii. Holotype ♀, Java: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "C. Javana. ♀ Java. J.Bigot." and his yellow generic label "G.Crossotocnema. J.Bigot."; it is in fair condition, but both fore legs, the left mid leg and right hind leg are lost.

The holotype has long soft entirely white hair on the pleural regions (as also on the scutum); Mesnil's (1949 : 80–81) use of *javana* Bigot, which he places in his key as a species with brownish black mesopleural hair, appears to be a misidentification.

Dejeania crocea Bigot, 1888 : 77. LECTOTYPE ♀, by present designation, SOUTH AFRICA, Cape of Good Hope: BMNH, London (ex coll. Bigot).

Paralectotypes: 3 ♀, same data as lectotype (BMNH).

This species was described by Bigot from four specimens (syntypes) for which he indicated the sex as "♂, ♀?"; all four specimens are in BMNH ex coll. Bigot and all are females, as van Emden (1960 : 474) has also noted. Each syntype has a label "Brauer WIEN. CVII. (No. 57)", but the original name label as *D. crocea* (which van Emden, loc. cit., records as "D.crocea ♂ F.Big. A.Cap. B. Esp.") was not found in Bigot's collection when this came to BMNH in 1960. All four syntypes are in bad condition; the specimen selected and here designated as lectotype has been chosen because it retains the antennae and palpi complete, but it is dirty with some glue on the thorax and abdominal base, has lost the left mid leg and right wing, and has the chaetotaxy disarranged; the paralectotypes show a few features better than the lectotype, but lack several legs and parts of the head, and one is much greased and the others eaten out. The paralectotypes are all conspecific with the lectotype.

Doleschalla consobrina Bigot, 1888 : 98. Holotype ♂, MOLUCCA ISLANDS: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "D. Consobrina. ♂. Moluques. J. Bigot" and his yellow generic label "G. Doleschalla. Walker."; it is in fair condition, except for some dirtiness with mould and loss of left fore leg and right hind leg.

The holotype of this species was incorporated into BMNH collection in 1904, and bears a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "Molucca Is." in pencil.

Doleschalla maculifera Bigot, 1888 : 100. Holotype ♀, NEW GUINEA: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "D.maculifera. ♀. Nouv. Guinée. J.Bigot" and a small rectangular white label with the printed word "N-GUIN" (i.e. New Guinea). It is in dreadful condition, all that remains being distorted head and thorax both completely concealed in thick mould, both fore legs and left mid leg (legs also mouldy); one wing also remains, this gummed to Bigot's name label.

The holotype specimen was evidently in very bad condition when first described, as Bigot headed the Latin description with the word "Detrita", and the following French description with the word "Détérioré".

Doleschalla nigra Bigot, 1888 : 98. Holotype ♀, MOLUCCA ISLANDS: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "D. Nigra. ♂. Moluques. J. Bigot" on which the generic name has been completed by the addition of "oleschalla" in an unknown handwriting; it is in fair condition, slightly mouldy, left fore leg and right fore tarsus lost, right mid and hind legs lost.

The holotype of this species was incorporated into BMNH collection in 1904, and bears a printed label "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "Molucca Is." in pencil.

Doleschalla picta Bigot, 1888 : 99. LECTOTYPE ♂, by present designation, NEW GUINEA: BMNH, London (ex coll. Bigot).

Paralectotype: 1 ♂, same data as lectotype (BMNH).

The lectotype bears Bigot's label "D. ? Picta. ♂. Nouv. Guinée. J.Bigot." and a small rectangular white label with the printed word "N-GUIN" (i.e. New Guinea); it is in fair condition except for some mould on the thorax, loss of left third antennal segment, loss of both mid legs and left hind leg, and some damage to wings. The ♂ paralectotype is conspecific with the lectotype; it lacks the data labels mentioned for lectotype, and is in poor condition with head and thorax covered in mould, and both wings and several legs missing.

Bigot was doubtful of the assignment to *Doleschalla* and headed the description "D.? picta", also putting the question-mark on his name label. The provenance he cited as

"Nouvelle-Guinée: Batchian", and New Guinea is here accepted as type-locality (not Batjan Island = Batchian) as there is an old label on one of the syntypes indicating New Guinea, and Bigot himself put this as the locality on his own label.

Doleschalla venosa Bigot, 1888 : 100. Holotype ♀, NEW GUINEA: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "D. Venosa. ♂. Nouv. Guinée. J.Bigot." and a small rectangular white label with the printed word "N-GUIN" (i.e. New Guinea); it is in fair condition, slightly dirty, right fore and hind legs and ring lost.

The holotype of this species was incorporated into the BMNH collection in 1904, and bears a printed label reading "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "New Guinea" in pencil.

Echinomyia flavopilosa Bigot, 1888 : 80. Holotype ♂, JAVA: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "E.flavopilosa. ♂. Java. J.Bigot." and is in fair condition, slightly mouldy, legs lost except for left fore and hind legs, left third antennal segment lost, body slightly greasy.

Exorista melas Bigot, 1889 : 256. Holotype ♀, TASMANIA ('Van-Diemen'): not located, presumed lost.

I have been unable to find the holotype of *Exorista melas* while incorporating Bigot's Tachinid collection into BMNH, and believe that it must be lost. In the absence of the type the generic position is completely uncertain. Bigot added the word "Detrita" after the Latin description of *melas*, and the holotype specimen was presumably therefore in very bad condition when described.

Exorista ornata Bigot, 1889 : 256. Holotype ♀ [not ♂], INDIA ('Indes'): BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "D. Ornata ♂ (olim. Exorista id. J. Bigot) J.Bigot. Inde", on which "exiosoma" has been added to the generic initial letter (making "Dexiosoma") in an unknown handwriting; it is in good condition except for a hole in the scutum and loss of part of the right fore tarsus.

The holotype of this species was incorporated into the BMNH collection in 1904, and bears a printed label reading "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904". on which Austen has added "India." in pencil.

Formosia papua Bigot, 1880 : 87. LECTOTYPE ♀ [not ♂], by present designation, NEW GUINEA (*L. Laglaise*): BMNH, London (ex coll. Bigot).

Paralectotype: 1 ♀, same data as lectotype (BMNH).

The lectotype bears Bigot's label "F.papua. ♂. Nov. Guinea. *Mas.* J.Bigot." and is in good condition except for loss of both mid legs. The ♀ paralectotype is correctly associated with the lectotype, and is a slightly teneral specimen with collapsed facial region and right mid and left hind legs missing.

The syntypes of this species were incorporated into the BMNH collection in 1904, and each bears a printed label reading "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "New Guinea. L.Laglaise." in pencil. Both are ♀, not ♂ as published and labelled by Bigot.

Formosia smaragdifera Bigot, 1874 : 462. LECTOTYPE ♂, by present designation, MOLUCCAS, Batjan ('Batchian'): BMNH, London (ex coll. Bigot).

Paralectotype: 1 ♀, same data as lectotype (BMNH).

The lectotype is in very good condition except for loss of the left third antennal segment and the left hind leg. The ♀ paralectotype is conspecific with the lectotype and is in fair condition, slightly flattened, right third antennal segment lost, both mid legs and right hind leg lost. In the original description of the male Bigot mentioned the presence of eight macrochaetae on the middle of the hind margin of the second (i.e. T3) abdominal segment, but this feature occurs actually in the ♀ syntype and not the ♂.

The syntypes of this species were incorporated into the BMNH collection in 1904, and each bears a printed label reading "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "Batjan, Molucca Is." in pencil.

Standing with the type-material in the BMNH collection are two other conspecific female specimens from Bigot's collection which were incorporated into the BMNH collection in 1904, and bear the same type of printed label as the syntypes; neither of these specimens is part of the original type-material, and both are from the island of Ternate; Austen's pencilled words "Ternate, Molucca Is." are present on the printed labels, and one of the two specimens also has an old very faded printed label reading "Ternate".

Formosia variegata Bigot, 1874 : 461. LECTOTYPE ♀, by present designation, AUSTRALIA: BMNH, London (ex coll. Bigot).

Paralectotype: 1 ♀, same data as lectotype (BMNH).

The lectotype bears Bigot's label "F. Variegata. ♀. J.Bigot. N.Holl."; it is in fair condition, left fore and right mid legs lost, apices of right fore tarsus and left mid tarsus lost, right third antennal segment lost. The paralectotype ♀ is correctly associated with the lectotype, and is the smaller specimen which Bigot referred to at the end of his main description and which he thought (wrongly) might be the male.

The syntypes of this species were incorporated into the BMNH collection in 1904, and each bears a printed label reading "Ex coll. Bigot. Pres. by G. H. Verrall, Oct. 1904." on which Austen has added "Australia." in pencil.

Formosia velutina Bigot, 1874 : 463. LECTOTYPE ♀, by present designation, TASMANIA: BMNH, London (ex coll. Bigot).

Paralectotypes: 2 ♀, same data as lectotype (BMNH).

The lectotype bears Bigot's label "F. Velutina. ♀. J.Bigot. V.Diemen." on which the generic name has been completed by the addition of "ormosia" in an unknown hand; it is in very good condition. Both paralectotypes are in fairly good condition and correctly associated with the lectotype.

The type-material of this species was incorporated into the BMNH collection in 1904, and each of the three original syntypes bears a printed label "Ex coll. Bigot. Pres. by G.H. Verrall, Oct.1904." on which Austen has added "Tasmania." in pencil.

Formosia viridithorax Bigot, 1874 : 457. Unavailable *nomen nudum*, cited in list of the species of *Formosia* Guérin-Méneville and attributed in error to Macquart.

[*Frerea tetropsis* Bigot, 1891 : 376. Not Tachinidae: belongs in Calliphoridae, tribe Rhiniini, valid species of *Rhyncomya* Robineau-Desvoidy, see Zumpt (1958 : 135) (holotype ♀ from Assinie, West Africa, in BMNH, London, ex coll. Bigot examined).]

Glossidionophora bicolor Bigot, 1885*d* : lv. Holotype ♀, AUSTRALIA: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "G. Bicolor. ♀. Australia J. Bigot."; it is in fair condition, slightly collapsed and teneral, right third antennal segment and right fore tarsus lost, slightly dirty.

Paramonov (1956 : 368) assigned *bicolor* to the genus *Cylindromyia* Meigen and pointed out that the name was then a junior secondary homonym in this genus, but he did not provide a replacement name; none is proposed at the present time, pending future study of the genera of Cylindromyiini. Paramonov (loc. cit.) incorrectly stated that Bigot made *bicolor* the type-species of *Glossidionophora* Bigot (which contained two original species): see Crosskey (1967*a* : 4).

[*Homodexia obscuripennis* Bigot, 1885*b* : xxvi. Not Tachinidae: belongs in Calliphoridae, tribe Calliphorini, nominal species of the genus *Bengalia* Robineau-Desvoidy, see Senior White *et al.* (1940 : 91) (holotype ♂ [not ♀] from Ceylon in BMNH, London, ex coll. Bigot examined).]

Ocyptera tristis Bigot, 1878 : 45. Holotype ♂, 'AUSTRALIA' (perhaps in error): BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "O. Tristis. ♀. Australia. J. Bigot."; it is in fair condition, except for loss of right mid leg, both hind tarsi and apices of fore tarsi.

Although no other specimens are known which belong to this species, the general appearance of this Cylindromyiine resembles that of *Gerocyptera* Townsend species from the East Indian Archipelago and the western Pacific rather than an Australian species; the cited provenance of Australia is possibly, therefore, not quite correct.

Rhynchiodexia tenuipes Bigot, 1885*a* : xi. Holotype ♀, NEW CALEDONIA: BMNH, London (ex coll. Bigot).

The holotype does not bear any name label from Bigot's collection, but was incorporated into the BMNH collection in 1904, and bears a printed label reading "Ex coll. Bigot. Pres. by G.H.Verrall, Oct.1904." on which Austen has added "New Caledonia, Oceania." in pencil. The condition is fair, except for loss of right mid and hind legs and of left hind tarsus, loss of tip of right wing, and partially collapsed eyes.

Rutilia argentifera Bigot, 1874 : 464. LECTOTYPE ♂, by present designation, NEW SOUTH WALES, Sydney: BMNH, London (ex coll. Bigot).

Paralectotype: 1 ♂, same data as lectotype (BMNH).

The lectotype bears Bigot's label "R. Argentifera. ♂. J.Bigot. Sydney" and is in good condition except for loss of right mid and hind legs and tip of left hind tarsus. The ♂ paralectotype is conspecific with the lectotype, and in good condition except for left wing broken loose basally, and missing right hind tarsus, left mid tarsus, left hind tibia and tarsus.

The type-material of this species was incorporated into the BMNH collection in 1904, and each syntype bears a printed label reading "Ex coll. Bigot. Pres. by G.H.Verrall, Oct. 1904." on which Austen has added "Sydney, New South Wales." in pencil.

Rutilia castanifrons Bigot, 1880 : 88. Holotype ♀, AUSTRALIA: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "R. Castanifrons. ♀. Australia. J.Bigot." on which Austen has written in pencil "(Original label, in Bigot's handwriting.) E.E.A. 5.x.04."; it is a discoloured and teneral specimen, slightly collapsed with left costal margin torn medially, but is in good condition in the sense that all structures are present.

The holotype was incorporated into the BMNH collection in 1904, and bears a printed label reading "Ex coll. Bigot. Pres. by G.H. Verrall, Oct.1904." on which Austen has added "Australia." in pencil.

Rutilia castanipes Bigot, 1880 : 87. LECTOTYPE ♀, by present designation, AUSTRALIA: BMNH, London (ex coll. Bigot).

Paralectotypes: 2 ♂, 1 ♀, same data as lectotype (BMNH).

The lectotype bears Bigot's label "R. Castanipes. ♀. Australia. J.Bigot." on which Austen has added in pencil "(Original, label in Bigot's handwriting) E.E.A. 5.xi.04."; it is in fair condition, dirty and greased, both wings damaged, right mid and hind tarsi lost, left hind tarsus lost except for basitarsus. The paralectotypes appear to be conspecific with the lectotype and are in rather poor condition; one of the ♂ paralectotypes (one lacking the left wing) bears an exactly similar label in Bigot's writing to that on the lectotype (cited above) except that the sex symbol is given as '♂'.

The type-material of *castanipes* was incorporated into the BMNH collection in 1904, and each of the four syntypes bears a printed label reading "Ex coll. Bigot. Pres. by G.H. Verrall, Oct.1904." on which Austen has added "Australia." in pencil.

Rutilia echinomides Bigot, 1874 : 466. Holotype ♀, AUSTRALIA: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "R. Echinomides. ♀. J. Bigot. N. holl." on which Austen has written in pencil "(Original label, in Bigot's handwriting) E.E.A. 5.x.04."; it is in fair condition, thorax and abdomen very greasy, some damage in prescutellar region, right third antennal segment and right fore leg lost (the specimen was not in good condition when described as Bigot recorded it as "en assez mauvais état").

The holotype was incorporated into the BMNH collection in 1904, and bears a printed label reading "Ex coll. Bigot. Pres. by G.H. Verrall, Oct.1904." on which Austen has added "Australia." in pencil.

Rutilia fulviventris Bigot, 1874 : 465. LECTOTYPE ♀, by present designation, TASMANIA: BMNH, London (ex coll. Bigot).

Paralectotypes: 3 ♀, same data as lectotype (BMNH).

The lectotype bears Bigot's label "R. Fulviventris. ♂.♀. J.Bigot. V.Diemen.", and is in very good condition. The paralectotypes are conspecific with the lectotype, and in fair condition except that one has lost the abdomen.

The type-material of this species was incorporated into the BMNH collection in 1904, and each syntype bears a printed label reading "Ex coll. Bigot. Pres. by G.H.Verrall, Oct.1904." on which Austen has added "Tasmania." in pencil.

Rutilia ruficornis Bigot, 1880 : 88. Holotype ♂. AUSTRALIA: BMNH, London (ex coll. Bigot).

The holotype bears Bigot's label "R. Ruficornis. ♀. Australia. J. Bigot." on which Austen has written in pencil "(Original label, in Bigot's handwriting) E.E.A. 5.x.04"; it is in poor condition, teneral specimen, head dirty with mould, left thorax dirty with glue, scutum and scutellum smashed, right wing broken, right fore and mid legs lost, left fore tarsus and both hind tarsi missing except for basitarsal segment. The sex is ♂ as Bigot correctly cited in the description: the '♀' indication on his label is in error.

The holotype of this species was incorporated into the BMNH collection in 1904, and bears a printed label reading "Ex coll. Bigot. Pres. by G.H.Verrall, Oct. 1904." on which Austen has added "Australia." in pencil.

This name is a junior secondary homonym of *R. ruficornis* (Macquart) but no replacement name is proposed as it is believed that another of Bigot's names is a synonym of *ruficornis* Bigot, which will be available as replacement name.

Rutilia semifulva Bigot, 1880 : 89. LECTOTYPE ♂, by present designation, AUSTRALIA: BMNH, London (ex coll. Bigot).

Paralectotype: 1 ♂, same data as lectotype (BMNH).

The lectotype bears Bigot's label "R. Semifulva. ♂. Australia. J. Bigot."; it is in fair condition, head and abdomen greasy, eyes partially collapsed, left mid and right hind legs lost. The ♂ paralectotype is conspecific with the lectotype, and retains all legs except the left hind leg.

The type-material of this species was incorporated into the BMNH collection in 1904, and each syntype bears a printed label reading "Ex coll. Bigot. Pres. by G.H.Verrall, Oct.1904." on which Austen has added "Australia." in pencil.

[*Xysta obtusa* Bigot, 1891 : 377. Not Tachinidae: belongs in Calliphoridae, tribe Rhiniini, valid species of *Rhyncomya* Robineau-Desvoidy, see Zumpt (1958 : 164) (holotype ♀ from Assinie, West Africa, should be in BMNH, London, ex coll. Bigot but has not been located).]

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PLATE 1

Examples of labels in the handwriting of Macquart (A–F) and Bigot (G & H), actual size.

A. Label of Macquart for new genus and new species.
Reads: "Exechopalpus rufipalpus. ♂ n.g., n.sp. Macq".

B. Label of Macquart for new species.
Reads: "Masicera rubrifrons. ♀ n.sp. Macq.".

C. Unusual label of Macquart for new species, with "nov." in place of "n.".
Reads: "Phorocera acutangulata ♂. nov. sp.".

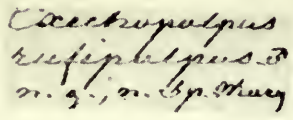
D. Label of Macquart for new species, with locality cited.
Reads: "Phorocera flavipalpis ♀. Macq. n.sp. Sydney".

E. Label of Macquart for new species, mounted on another label from Bigot's collection.
Reads: "Rutilia fulgida ♂. Macq. n.sp." in Macquart's writing, with additions "Sidney" on the left and "Nomm. par. Macq." on the right in Bigot's writing.

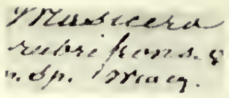
F. Later identification label of Macquart.
Reads: "Heterometopia argentea Macq.".

G. Label of Bigot for a genus in Bigot's collection.
Reads: "G. Atractodexia. J. Bigot".

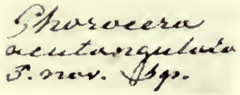
H. Label of Bigot for a species in Bigot's collection.
Reads: "A. Argentifera. ♂. Nouv. Caledon. J. Bigot.".


Cxectropalpus
rufipalpus ♂
n. g., n. sp. Macq

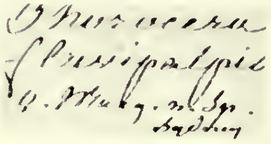
A


Masicera
rubrifrons ♀
n. sp. Macq.

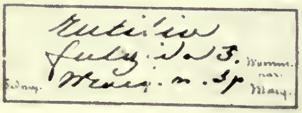
B


Phorocera
acutangulata
♂. nov. sp.

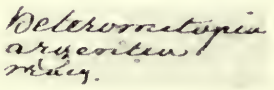
C


Masicera
flavipalpis
♀. Macq. n. sp.
Sydney

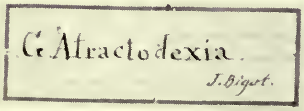
D


Rutilia
fulviventris ♂.
Macq. n. sp
Sidney.
Numm. nov. Macq.

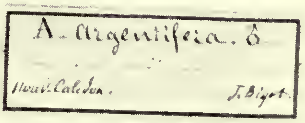
E


Heterometopia
argentea
Macq.

F


G. Atractodexia.
J. Bigot.

G


A. argentifera. ♂
Nouv. Caledon.
J. Bigot.

H

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A LIST OF THE TYPE-SPECIMENS OF EPHEMEROPTERA IN THE BRITISH MUSEUM (NATURAL HISTORY)

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NATURAL HISTORY

D. E. KIMMINS

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ENTOMOLOGY Vol. 25 No. 7
LONDON: 1971

A LIST OF THE TYPE-SPECIMENS OF EPHEMEROPTERA IN THE BRITISH MUSEUM (NATURAL HISTORY)

BY

DOUGLAS ERIC KIMMINS Kif

Pp. 307–324

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ENTOMOLOGY Vol. 25 No. 7
LONDON: 1971

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A LIST OF THE TYPE-SPECIMENS OF EPHEMEROPTERA IN THE BRITISH MUSEUM (NATURAL HISTORY)

By D. E. KIMMINS

SYNOPSIS

Three hundred and five taxa are listed. Thirteen lectotypes are designated and the status of the other type-specimens is given.

The present paper follows the general pattern of my previous lists of type-specimens in the British Museum (Natural History) but fewer lectotypes are designated in it. In 1960, I published a list of the Ephemeroptera types of species described by the three major British workers on the order, namely Eaton, McLachlan and Walker, in which lectotypes were designated where necessary. This list included species whose types were in museums other than in the BMNH. In the present list, in the references to taxa dealt with in Kimmins (1960), the status of the type-specimen is given in square brackets. In that paper, 72 lectotypes were designated from BMNH material, bringing the total designated up to 109 and thirteen more are designated in the present work.

Three hundred and five taxa are dealt with in the present list, and of these, the type-specimens of 14 taxa (mostly described by Stephens) are either lost, or are unlabelled and not recognizable from Stephens' descriptions. Some were already lost or unrecognizable when Eaton was preparing his 1871 monograph.

Additional information as to the locality data of the types, either not given or abbreviated in the original description, has been included here in square brackets. LECTOTYPE indicates present designation.

This list was completed in March, 1970.

aapta Harker ***(Mirawara)***, 1954 : 261–263, text-figs 69–71. Holotype ♂. N[ew] S[outh] W[ales], Upper Murrumbidgee R., Adaminaby, 11.xii.1936 (*R. J. Tillyard*) / Abdomen in slide cabinet / Genitalia, slide XIII / Mirawara aapta [J.E.H.).

abyssinicus Ulmer ***(Tricorythus)***, 1930 : 502–505, text-figs 23, 24. LECTOTYPE ♂. Abyssinia, Akaki Ravine, 6500–7000 ft, 17.x.1926, to candle light in tent (*H. Scott*) / Tricorythus abyssinicus Ulm[er], Typen!

Currently placed in the genus *Neurocaenis*.

aequatorialis Kimmins ***(Ephemera)***, 1956 : 86–87, text-figs 26–31. Holotype ♂ (in 2% formaldehyde solution). Uganda, Jinja, At light, xii.1954 (*P. S. Corbet*). Ephemera aequatorialis Kim., ♂ Type.

Currently placed in the genus *Afromera*. The ♂ & ♀ types are now somewhat reddish, having absorbed some of the red dye from the margin of the type-label.

aestivalis Eaton ***(Siphlurus)***. Kimmins, 1960 : 272, text-fig. 3 [♂ Lectotype].

affinis Eaton ***(Ecdyurus)***. Kimmins, 1960 : 282, text-fig. 17 [♂ Lectotype].

africanum Gillies ***(Prosopistoma)***, 1954 : 359–362, text-figs 1–3, 5–16, 18, 20, 22. Holotype nymph (in 2% formaldehyde solution). [East Africa], T[anganyika] T[erritory], E. Usambaras, 1500 ft, [Amani], Sigi River, 14.ix.[19]52 [*M. T. Gillies*], Prosopistoma africanum [M. T. Gillies det.]

albifilum Walker ***(Palingenia)***. Kimmins, 1960 : 312, text-fig. 61 [♂ Holotype].

albivitta Walker ***(Baetis)***. Kimmins, 1960 : 309 [♂ Lectotype].

algiricum Eaton ***(Centroptilum)***. Kimmins, 1960 : 290 [♂ Lectotype].

alpestris Eaton ***(Rhithrogena)***. Kimmins, 1960 : 283, text-fig. 20 [♂ Lectotype, fig. incorrectly given as 25].

alpicola Eaton ***(Heptagenia)***. Kimmins, 1960 : 280, text-fig. 13 [♂ Holotype].

amabilis Eaton ***(Rhoenanthus)***. Kimmins, 1960 : 306, text-fig. 51 [♂ Lectotype].

amenia Harker ***(Kirrara)***, 1954 : 260, text-figs 42, 60, 61. Holotype ♂. [New South Wales], Mt Kosciusko, Spencers Creek, 6000 ft, 20.xii.1932 (*R. J. Tillyard*) / Kirrara amenia.

amnicus Eaton ***(Baetis)***. Kimmins, 1960 : 286, text-fig. 23 [♂ Lectotype].

ampla Eaton ***(Palingenia (Anagenesia))***. Kimmins, 1960 : 314, text-fig. 63 [♂ Lectotype].

anceps Eaton ***(Euthyplocia)***. Kimmins, 1960 : 307, text-fig. 52 [♂ Holotype].

anceps Eaton ***(Metamonius)***. Kimmins, 1960 : 270, text-fig. 1 [♂ Lectotype].

angulata Walker ***(Baetis)***. Kimmins, 1960 : 309 [♂ Lectotype].

annulata Walker ***(Baetis)***. Kimmins, 1960 : 272 [♂ Holotype].

annulifera Walker ***(Palingenia)***. Kimmins, 1960 : 279 [♂ Holotype].

[***apicalis*** Stephens ***(Ephemera)***, 1836 : 59. According to Eaton, 1871 : 9, the Stephens Collection then contained 2 ♂ *Ephemerella ignita* (Poda) and 1 ♂ *Baetis phaeops* Eaton over the label 'apicalis'; on page 26 of the same work, Eaton placed *Ephemera apicalis* Stephens in the synonymy of *Ephemerella ignita* (Poda) but does not refer to *apicalis* Stephens in the synonymy of his *Baetis phaeops*. It is not possible to recognize which examples of *Ephemerella ignita* were the types of Stephens' *apicalis*. The example labelled *apicalis* in the Stephens Collection is a ♂ *Baetis*, lacking anal appendages. I know of no recent usage of the name *Ephemera apicalis* Stephens and it seems desirable to treat it as a *nomen oblitum*.]

armatus Eaton ***(Siphlonurus)***. Kimmins, 1960 : 272 [♂ Lectotype].

assamensis Kimmins ***(Cinygmina)***, 1937 : 435–436, text-fig. 3. Holotype ♂. Assam, Khasia Hills, Eaton Bequest / Cinygmina assamensis Kimmins, ♂ Type, det. D. E. Kimmins. The ♂ type now lacks its setae.

assimilis Eaton ***(Epeorus)***. Kimmins, 1960 : 280, text-fig. 14 [♂ Lectotype].

atrebatinus Eaton ***(Baetis)***. Kimmins, 1960 : 286 [♂ Lectotype].

auriculata Eaton ***(Leptophlebia)***. Kimmins, 1960 : 294, text-fig. 36 [♂ Lectotype].

australis Walker ***(Ephemera)***. Kimmins, 1960 : 294 [♂ Lectotype].

austriacus Kimmins ***(Ecdyonurus)***, 1958 : 226–230, text-figs 1–8. Holotype ♂ (in 2% formaldehyde solution). Austria, Brodingbach, 700 m, 25.viii.1955 / Ecdyonurus austriacus Kim., ♂ Type, D. E. Kimmins det. 1956.

basalis Walker ***(Baetis)***. Kimmins, 1960 : 286 [♂ Holotype].

bellus Eaton ***(Thraulus)***. Kimmins, 1960 : 303, text-fig. 49. [Lectotype].

bengalense Kimmins ***(Cloeon)***, 1947 : 95–96, text-figs 3, 7, 11. Holotype ♀ (in 2% formaldehyde solution). [Bengal], Calcutta distr., x.1945 (*D. E. Kimmins*), Cloeon bengalense Kim., Type ♀.

bengtssoni Müller-Liebenau ***(Baetis)***, 1966 : 65–79, 8 text-figs. Holotype ♂ (in 2% formaldehyde solution). Baetis bengtssoni ♂, Hangelsbach (Eifel), 7 Juli 1965, Müller-Liebenau leg. et det.

berneri Kimmins ***(Caenis)***, 1955 : 879–880, text-fig. 13. Holotype ♂ (in 2% formaldehyde solution). Nyasaland, L. Nyasa, Chipoka, 6.viii.1952 (*Lewis Berner*)/ Caenis berneri Kim., ♂ Holotype, D. E. Kimmins det. 1953.

bicolor Kimmins ***(Cloeon)***, 1947 : 97–98, text-figs 4, 8, 12. Holotype ♀ (in 2% formaldehyde solution). [Bengal], Calcutta distr., xi.1945 (*D. E. Kimmins*), Cloeon bicolor Kim., Type ♀.

bicolor Walker ***(Palingenia)***. Kimmins, 1960 : 274 [♀ Holotype].

bimaculatum Eaton ***(Cloeon)***. Kimmins, 1960 : 292, text-fig. 35 [♀ Lectotype].

binotatus Eaton ***(Siphlurus)***. Kimmins, 1960 : 272, text-fig. 4 [♂ Lectotype].

bocagii Eaton ***(Baetis)***. Kimmins, 1960 : 286–288, text-fig. 24 [♂ Holotype].

brevipes Kimmins ***(Caenis)***, 1956 : 84–86, text-figs 24, 25. Holotype ♂ (mounted with allotype ♀ on microscope slide, in euparal). Uganda, Jinja, At light, xii.1954 (*P. S. Corbet*) / Caenis brevipes Kim., ♂ Type, ♀ allotype.

brevissimus Eaton ***(Leptohyphes)***. Kimmins, 1934 : 347, fig. 12 [as 'type'].

brunnea Tillyard ***(Atalophlebia)***, 1936 : 43–44, text-figs 8, 14, 21. Holotype ♂ (in 2% formaldehyde solution). [Northern] Tas[mania], [South Esk River], Clarendon (*Eric Scott*), Atalophlebia brunnea Till.

buceratus Eaton ***(Baetis)***. Kimmins, 1960 : 288 [♂ Lectotype].

bugandensis Kimmins ***(Euthraulus)***, 1956 : 79–80, text-figs 12, 13, 15. Holotype ♂ (in 2% formaldehyde solution). Uganda, Entebbe, 3.iii.1954 (*R. Hartland-Rowe*) / Euthraulus bugandensis Kim., ♂ Type, D. E. Kimmins det. 1954.

bundutum Harker ***(Deleatidium)***, 1954 : 256–257, text-figs 39, 49, 50, 53–57. Holotype ♂ (in 2% formaldehyde solution, genitalia mounted as microscope preparation). N[ew] S[outh] W[ales], Armidale, [Dumaresque Cr.], 3000 ft, 6.vii.1948 (*J. E. Harker*], Deleatidium bundutum Hark. Type.

campestre Gillies ***(Centroptilum)***, 1949 : 172, text-fig. 19. Holotype ♂ (in 2% formaldehyde solution). India, C[entral] P[rovinces], River Sonar, near Saugor, 11.iii[19]45 [*M. T. Gillies*], Centroptilum campestre sp. n. ♂, holotype [M. T. Gillies det.].

canadense Walker ***(Baetis)***. Kimmins, 1960 : 284 [♂ Lectotype].

candida Eaton ***(Elassoneuria)***. Kimmins, 1960 : 274–275, text-fig. 8 [♀ Holotype].

chilensis Eaton ***(Atalophlebia)***. Kimmins, 1960 : 294 [♂ Lectotype].

[***chironomiformis*** (Curtis) Stephens ***(Caenis)***, 1836 : 62. This specimen is in rather poor condition, but the form of the antennal bristle and the abdominal markings recall those of *Caenis moesta* Bengtsson. Whether Stephens correctly identified Curtis' species can only be settled by an examination of the type in the National Museum of Victoria.]

cibaria Eaton ***(Caenis)***. Kimmins, 1960 : 305 [♂ Lectotype].

cingulata Stephens ***(Baetis)***, 1836 : 67. LECTOTYPE ♂. Stephens Coll. / cingulata *Step.* / Baetis cingulata Steph., ♂ Lectotype, D. E. Kimmins det. 1969.

Currently placed as a synonym of *Habrophlebia fusca* (Curt.).

cognatum Stephens ***(Cloeon)***, 1836 : 69. Holotype ♂. Stephens Coll. / cognatum *Step.* / C. dipterum L., det. K. G. Blair / Cloeon cognatum Steph., ♂ Holotype, D. E. Kimmins det. 1969.

The type now lacks its abdomen. Currently placed as a synonym of *C. dipterum* (L.).

cognata Stephens ***(Ephemera)***, 1836 : 56. LECTOTYPE ♀. Stephens Coll. / From its size and general appearance, I believe this to be one of the type-series of *Ephemera cognata* Stephens, D. E. Kimmins det. 1953 / Ephemera cognata Stephens, ♀ Lectotype, D. E. Kimmins det. 1969.

This appears to be the only example with measurements approximating to those given by Stephens. An example bearing a label '2 cognata' is much too small to be considered as part of the type-series. Placed by Eaton as a synonym of *Ephemera danica* Müller.

colombiae Walker ***(Ephemera)***. Kimmins, 1960 : 302 [♀ Holotype].

concinna Walker ***(Palingenia)***. Kimmins, 1960 : 300 [♂ Holotype].

concinnum Eaton ***(Cloeon)***. Kimmins, 1960 : 292 [♂ Lectotype].

continua Walker ***(Palingenia)***. Kimmins, 1960 : 309 [♂ Holotype].

corbeti Kimmins ***(Centroptilum)***, 1956 : 75–76, text-figs 6–8. Holotype ♂ (in 2% formaldehyde solution). Uganda, Jinja, at light, xii.1954 (*P. S. Corbet*) / Centroptilum corbeti Kim., ♂ Holotype.

The type and allotype are now much more reddish in color, having absorbed the red color bordering the type label.

costale Kimmins ***(Dicercomyzon)***, 1957*b* : 130–132, text-figs 1, 3. Holotype ♂ (in 2% formaldehyde solution). Gold Coast, Afram R., Mankrong, 13.ix.1950 (*Lewis Berner*) / Dicercomyzon costale Kim., ♂ Type, D. E. Kimmins det. 1956.

crassi Gillies ***(Prosopistoma)***, 1954 : 362–364, text-figs 4, 17, 19, 21. Holotype nymph (in 2% formaldehyde solution). S. A[frica], Natal, Umgeni River, 1200 ft, xii.[19]53, (*R. S. C[rass]*). Prosopistoma crassi Holotype nymph [M. T. Gillies det.].

cupulata Eaton ***(Heptagenia)***. Kimmins, 1960 : 283 [♂ Lectotype].

curtus Eaton ***(Campsurus)***. Kimmins, 1960 : 312, text-fig. 60 [♂ Lectotype].

curtus Kimmins ***(Euthraulus)***, 1956 : 80–81, text-figs 14, 16. Holotype ♂ (mounted as two microscope preparations in euparal). Uganda, Kazi, 8.iii.1954 (*R. Hartland-Rowe*) / Euthraulus curtus Kim., ♂ Type.

cylindroculum Kimmins ***(Procloeon)***, 1955 : 865–866, text-fig. 2. Holotype ♂ (mounted as microscope preparation). Nyasaland, Tengadzi [Camp], 22.vii.1952 (*Lewis Berner*) / Procloeon cylindroculum Kim., ♂ Type.

debilis Walker ***(Baetis)***. Kimmins, 1960 : 302 [♂ Holotype].

debilis Walker ***(Cloeon)***. Kimmins, 1960 : 292, text-fig. 33. [♀ Lectotype].

decipiens Harker ***(Deleatidium)***, 1954 : 255, text-figs 38, 47, 48. Holotype ♂. N[ew] S[outh] W[ales], Upper Murrumbidgee R[iver], Adaminaby, 11.xii.1936 (*R. J. Tillyard*) / Deleatidium decipiens.

decora Walker ***(Ephemera)***. Kimmins, 1960 : 308 [♂ Holotype].

decoratus Kimmins ***(Adenophlebiodes)***, 1956 : 77–78, text-figs 10, 11. Holotype ♂ (in 2% formaldehyde solution). Uganda, Jinja, 6.iii.1954 (*P. S. Corbet*) / Adenophlebiodes decoratus Kim., ♂ Type, D. E. Kimmins det. 1954.

Adenophlebiodes decoratus Kim., 1956 is a secondary homonym of *A. decorata* (Navás), 1931, and has been renamed *Adenophlebiodes* (*Hyalophlebia*) *demoulini* Kim., 1960.

delicatula Tillyard ***(Atalophlebia)***, 1936 : 47–49, text-figs 10, 16, 23. Holotype ♂. Atalophlebia delicatula Till., Holotype ♂, R.J.T., N. Esk [River], Tas[mania], 21.i.[19]33 [*R. J. Tillyard*].

demoulini Kimmins ***(Adenophlebiodes)***, 1960*a* : 352 [n.n. for *decoratus* Kim., 1956, *nec* Navás, 1931.

dentata Eaton ***(Leptophlebia)***. Kimmins, 1960 : 295, text-fig. 38 [♂ Lectotype].

dentatum Kimmins ***(Cloeon)***, 1956 : 76–77, text-fig. 9. Holotype ♂ (mounted as a preparation in euparal). Uganda, Jinja, ix–x, 1954 (*P. S. Corbet*) / Cloeon dentatum Kim., ♂ Type.

determinatus Walker ***(Baetis)***. Kimmins, 1960 : 285 [♂ Holotype].

[***diluta*** Stephens ***(Ephemera)***, 1836 : 58. Eaton, 1871 : 9 reported that the type was missing.]

dimidiata Stephens ***(Caenis)***, 1836 : 61. LECTOTYPE ♂. minimus / Stephens Coll. / Caenis dimidiata Stephens ♂ Type, D. E. Kimmins det. 1953 / Caenis dimidiata Stephens, ♂ Lectotype, D. E. Kimmins det. 1969.

Currently placed as a synonym of *Caenis horaria* (L.).

diminuta Walker ***(Caenis)***. Kimmins, 1960 : 395 [♂ Holotype].

dipsicus Gillies ***(Baetis)***, 1949 : 163–164, text-figs 1, 10. Holotype ♂ (in 2% formaldehyde solution). India, Poona, R. Mutha, 10.ix.[19]45 (*M. T. Gillies*]. Baetis dipsicus sp. n. Holotype ♂.

Although Gillies refers in the description to 'the type-specimens, four males and two females', he has labelled a holotype and I am accepting this as a designation of holotype.

dislocans Walker ***(Ephemera)***. Kimmins, 1960 : 294 [♀ Holotype].

dispar Stephens ***(Ephemera)***, 1836 : 58. LECTOTYPE ♂. Stephens Coll. / ? Ephemera dispar Steph., D. E. Kimmins det. 1953 / Ephemera dispar Stephens, ♂ Lectotype, D. E. Kimmins det. 1960.

This example agrees well with the description of the imago. The specimen bearing the label 'dispar *Steph.*' is the 'pseudimago'; it now consists of the mesothorax and anterior wings.

dissitus Eaton ***(Ameletus)***. Kimmins, 1960 : 270 [♂ Lectotype].

distans Eaton ***(Oniscigaster)***. Kimmins, 1960 : 271 [♀ Lectotype].

dobbsi Eaton ***(Oligoneuria)***. Kimmins, 1960 : 276–277, text-figs 9, 10 [♂ Holotype].

[***dubia*** Stephens ***(Ephemera)***, 1836 : 59–60. Type not recognizable from description.

Placed by Eaton as synonymous with his *Baetis phaeops*. It is probably best treated as a *nomen oblitum*.]

eatoni Kimmins ***(Baetis)***, 1934 : 349–350, fig. 15. Holotype ♂. Mexico, N. Sonora (*Morrison*) / B.C.A. Neuropt., Baetis sp. / Baetis eatoni sp. n., det. D. E. Kimmins.

eatoni Kimmins ***(Ecdyonurus)***, 1937 : 438–439, pl. 11, fig. 3; text-fig. 5. Holotype ♂. Assam, Khasia Hills, Eaton Bequest / Ecdyonurus eatoni Kimmins, ♂ Type, det. D. E. Kimmins.

edwardsi Kimmins ***(Caenis)***, 1939 : 107–108, text-fig. 1. LECTOTYPE ♂. Uganda, Ruwenzori Range, xii.1934–i.1934.1935 (B. M. E. Afr. Exp.) / Fort Portal, 5000 ft (*F. W. Edwards*) / Caenis edwardsi Kimm. [♂] type, det. D. E. Kimmins / Caenis edwardsi Kim., ♂ Lectotype, D. E. Kimmins det. 1969.

elongatula McLachlan ***(Leptophlebia)***. Kimmins, 1960 : 304 [♀ Lectotype].

erromangense Kimmins ***(Cloeon)***, 1936 : 80–81, text-figs 9, 10. Holotype ♂ (mounted as two microscope preparations). New Hebrides, Erromanga, Man-o'-War, N. C., 3.ix.1930 (*L. E. Cheesman*) / Cloeon erromangense Kim., ♂ Type.

exigua Eaton ***(Choroterpes)***. Kimmins, 1960 : 296, text-fig. 44 [♂ Lectotype].

exspectans Walker ***(Potamanthus)***. Kimmins, 1960 : 308 [♀ Holotype].

explicatus Eaton ***(Tricorythus)***. Kimmins, 1934 : 346 [designation of ♂ Lectotype (as 'type')].

exquisitus Eaton ***(Ameletus)***. Kimmins, 1960 : 270 [♂ Lectotype].

facialis Gillies ***(Cryptopenella)***, 1951 : 127, text-figs 11, 12, 14. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). Hong Kong [Colony], River Shing Man, near Kowloon, 22.iii.[19]47, Cryptopenella facialis, ♂ Holotype [M. T. Gillies det.].

fasciatus Eaton ***(Bleptus)***. Kimmins, 1960 : 278, text-fig. 12. [♂ Holotype].

fasciatus Kimmins ***(Hagenulus)***, 1956 : 81–82, text-figs 17, 18. Holotype ♂ (in 2% formaldehyde solution). Uganda, Kaazi, 12.viii.1954 (*R. Hartland-Rowe*), Hagenulus fasciatus Kim., ♂ Type.

finitimus Eaton ***(Baetis)***. Kimmins, 1960 : 288, text-fig. 25 [♂ Lectotype].

flaveola (Pictet) Walker, 1853 : 559; Spieth, 1940 : 338.

Spieth places the ♀ imago as a synonym of *Stenonema luteum* Clemens, one ♀ subimago as *Stenonema rubromaculatum* Clemens and the other ♀ subimago as *Heptagenia hebe* McD.

fluitans Gillies ***(Baetis)***, 1949 : 166–167, text-figs 3, 18. Holotype ♂ [so labelled by author] (in 2% formaldehyde solution). India, Poona, R. Mutha, 10.ix.[19]45 [*M. T. Gillies*], Baetis fluitans sp. n. [M. T. Gillies det.].

formosus Eaton ***(Potamanthus)***. Kimmins, 1960 : 306, text-fig. 50 [♂ Lectotype].

fradgleyi Blair ***(Rhithrogena)***, 1929 : 253–254, text-fig. 1. Holotype ♂. Bickham, 1.vi.[19]28 (*K. F. F[radgley]*) / Rhithrogena fradgleyi Blair, Type, det. K. G. Blair.
Currently placed as a synonym of *R. haarupi* Esben-Petersen.

frater Tillyard ***(Baetis)***, 1936 : 50–53, text-figs 20, 24, 26–28. Holotype ♂ (in 2% formaldehyde solution). Baetis frater, Weldborough, N.E. Tasmania, Type Male.

[***fusca*** (Curtis) Stephens ***(Ephemera)***, 1836 : 58. Synonymized by Eaton with *Ephemerella ignita* (Poda). Example not recognized.]

fusca Walker, *nec* Burmeister, ***(Baetis)***, 1853 : 568; Spieth, 1940 : 334. Re-named *Rhithrogena jejuna* Eaton, 1885.

fuscata Walker ***(Baetis)***. Kimmins, 1960 : 304 [♂ Lectotype].
According to Spieth, 1940 : 335, the second (subimaginal) example is probably a *Rhithrogena*.

fuscula Tillyard ***(Atalophlebia)***, 1936 : 44–47, text-figs 9, 15, 19, 22. Holotype ♂. Atalophlebia fuscula Till., Holotype ♂, R. T. J., R. Shannon, Tas[mania], 27.i.[19]33.

gallica Eaton ***(Heptagenia)***. Kimmins, 1960 : 282, text-fig. 18 [♂ Lectotype].

gemellus Eaton ***(Baetis)***. Kimmins, 1960 : 288 [♂ Lectotype].

geminatum Eaton ***(Cinygma)***. Kimmins, 1960 : 283 [♀ Lectotype].

geminus Eaton ***(Epeorus)***. Kimmins, 1960 : 280, text-fig. 16 [♂ Lectotype].

giganteus Tillyard ***(Coloburiscus)***, 1933 : 22–29, text-figs 32–45; pl. 1, figs 7, 8. Holotype ♂. [New South Wales], Mt Kosciusko, 5000 ft, [Digger's Creek], 30.i.1930 (*R. J. Tillyard*) / Coloburiscus giganteus Till., ♂ Holotype Imago, R. J. T.
Currently placed in *Coloburiscoides*.

gilliesi Corbet ***(Afronurus)***, 1962 : 573–575, text-figs 1–3. Holotype ♂ (in 2% formaldehyde solution). [Tanganyika], Sigi R., Amani, 1800 ft, 2.v.[19]53 (*M. T. Gillies*), Afronurus II / Afronurus gilliesi sp. n., P. S. Corbet det. / ♂ Type.

grandis Eaton ***(Ephemerella)***. Kimmins, 1960 : 304 [♀ Lectotype].

gravastellus Eaton ***(Blasturus)***. Kimmins, 1960 : 300 [♂ Holotype].

gregalis Eaton ***(Leptophlebia)***. Kimmins, 1960 : 300 [♂ Holotype].

harrisoni Barnard ***(Afronurus)***, 1932 : 257–258, text-figs 45, 46b, c, 48; Schoonbee, 1968 : 24 (Lectotype designation). Lectotype ♂. Groot Drakenstein [*A. C. H.*], Afronurus harrisoni Brnd., ♂ Lectotype, H. Schoonbee det. 1964.
Lectotype label written by D. E. K. at Mr. Schoonbee's request.

harveyi Kimmins ***(Procloeon)***, 1947 : 94–95, figs 2, 6, 10. Holotype ♀ (in 2% formaldehyde solution). [Bengal], Calcutta distr., Nov. 1945 (*D. E. Kimmins*), Procloeon harveyi Kim., Type ♀.

hebe Walker ***(Ephemera)***. Kimmins, 1960 : 300 [♀ Holotype].

helveticus Eaton ***(Ecdyurus)***. Kimmins, 1942*a* : 125 [♂ Lectotype].

helvipes Stephens ***(Ephemera)***, 1836 : 59. Holotype ♀. Small red label / helvipes *Step.* / Stephens Coll. / Ephemera helvipes Steph., ♀ Holotype, D. E. Kimmins det. 1969.
Currently placed as a synonym of *Paraleptophlebia submarginata* (Stephens).

hilaris Eaton ***(Thraulus)***. Kimmins, 1934 : 345, fig. 10 [designation of lectotype ♂ (as 'type')].

hindustanicus Gillies ***(Thraulus)***, 1951 : 122–124, text-figs 1, 2, 5, 7. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). India, N. Bengal, [Darjeeling Distr.,] Mirik, [3500–4000 ft] 18.ix.[19]46 [*M. T. Gillies*], Thraulus hindustanicus sp. n., ♂ holotype. [M. T. Gillies det.]

hudsoni McLachlan ***(Ephemera)***. Kimmins, 1960 : 311, text-fig. 59 [♂ Lectotype].

humeralis Walker ***(Palingenia)***. Kimmins, 1960 : 274 [♀ Holotype].

humilis Eaton ***(Choroterpes)***. Kimmins, 1960 : 296, text-fig. 42 [♂ Lectotype].

[***hyalinatum*** Stephens ***(Cloeon)***. Type not distinguishable from *Centroptilum luteolum* series.]

hybrida Eaton ***(Rhithrogena)***. Kimmins, 1960 : 284, text-fig. 21 [♂ Lectotype].

ida Tillyard ***(Atalophlebia)***, 1936 : 42–43, pl. 1, fig. 10; text-fig. 7. Holotype ♀. Tasmania, 7.ii.1933 (*R. J. Tillyard*), Atalophlebia ida Tillyard, ♀ Holotype, D. E. Kimmins det. 1969.

This example originally bore a BM paratype label, but has been relabelled Holotype to agree with Tillyard's description.

ignota Walker ***(Baetis)***. Kimmins, 1960 : 274, text-fig. 5 [♂ Holotype].

illustris Eaton ***(Hexagenia)***. Kimmins, 1960 : 307 [♂ Holotype].

inopinatus Eaton ***(Ameletus)***. Kimmins, 1960 : 270 [♀ Lectotype].

inopinum Gillies ***(Pseudocloeon)***, 1949 : 171–172, text-fig. 2. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). [India], N. Bengal, 4000 ft, 20.ix.[19]46 [*M. T. Gillies*], Pseudocloeon inopinum sp. n., ♂ Holotype. [M. T. Gillies det.]

inornata Eaton ***(Choroterpes)***. Kimmins, 1934 : 340, fig. 2 [designation of Lectotype (as 'type')].

insignis Eaton ***(Heptagenia)***. Kimmins, 1960 : 279 [♂ Lectotype].

integrum Eaton ***(Cinygma)***. Kimmins, 1960 : 278 [♂ Lectotype].

intermedia Eaton ***(Chirotonetes)*** Kimmins, 1960 : 274 [♂ Holotype].

intermedius Eaton ***(Oniscigaster)***. Kimmins, 1960 : 271 [♀ Holotype].

interrupta Stephens ***(Caenis)***, 1836 : 62. LECTOTYPE ♂. macrura *Step.* / Caenis macrura Steph. ♂ [abdomen in glycerine], D. E. Kimmins det. 1961 / Caenis interrupta Steph., ♂ Lectotype, D. E. Kimmins det. 1969.

There is no example bearing this name in the Stephens Coll. According to Eaton (1871 : 21), it was a female of *Caenis macrura* Steph., but he does not refer to it earlier (1871 : 9), possibly because it had no Stephens Coll. label. The style of mounting is similar, it agrees well with the description and I have therefore designated it as Lectotype. Currently placed as a synonym of *Caenis macrura* Steph.

invaria Walker ***(Baetis)***. Kimmins, 1960 : 304 [♂ Lectotype].

italicus Eaton ***(Ecdyurus)***. Kimmins, 1942*a* : 125 [♂ Lectotype].

japonica McLachlan ***(Ephemera)***. Kimmins, 1960 : 308 [♂ Lectotype].

jejuna Eaton ***(Rhithrogena)***. Kimmins, 1960 : 284 [♂ Lectotype].

jinjana Kimmins ***(Caenodes)***, 1956 : 84–86, text-figs 22, 23. Holotype ♂ (mounted as microscope preparation). Uganda, Jinja, at light, ix–x.1954 (*P. S. Corbet*) / Caenodes jinjana Kimmins, ♂ Type.

julia Gillies ***(Cloeon)***, 1949 : 176, text-fig. 22. Holotype ♀ (unique) (in 2% formaldehyde solution). Malaya, Johore, Kluang, 9.vii.[19]46 (*M. T. Gillies*], Cloeon julia sp. n. ♀ Holotype [M. T. Gillies det.].

kala Harker ***(Atalophlebia)***, 1954 : 247–248, text-figs 7, 8, 36. Holotype ♂. [New South Wales], Mt. Kosciusko, Lake Albina, 2.ii.1929 (*R. J. Tillyard*) / Atalophlebia kala [J.E.H.] / Abdomen in slide cabinet.

kiboensis Gillies ***(Ephemerythus)***, 1960 : 37–38, text-figs 5, 8. Holotype ♂ (in 2% formaldehyde solution). Tanganyika, Kilimanjaro, [4000 ft], Marungu, 25.x.[19]54 [*M. T. Gillies*], Ephemerythus kiboensis sp. n. ♂ holotype [M. T. Gillies det.].

kokunia Harker ***(Atalophlebia)***, 1954 : 244–246, text-figs 5, 6, 13. Holotype ♂. Q[ueensland], Eidsvold, 28.viii.[19]29 [*R. J. Tillyard*] / Atalophlebia kokunia [J. E. H. handwriting].

kungu Eaton ***(Caenis)***. Kimmins, 1960 : 305 [♂ Holotype].

lacusalbinae Tillyard ***(Ameletoides)***, 1933 : 6–11, text-figs 1–11, pl. 1, figs 1–2. Holotype ♂. N[ew] S[outh] W[ales], Mt. Kosciusko, Lake Albina, 6350 ft, 2.ii.1929 (*R. J. Tillyard*) / Ameletoides lacus-albinae Till., Holotype, ♂ Imago, R.J.T.

lacuscaerulei Tillyard ***(Tasmanophlebia)***, 1933 : 13–17, text-figs 17–30; pl. 1, figs 3–6. Holotype ♂. N[ew] S[outh] W[ales), Mt Kosciusko, Blue Lake, (6200 ft), 1.ii.1930 (*R. J. Tillyard*), Tasmanophlebia lacus-caerulei Till., ♂ Holotype Imago, R.J.T.

lacustre Eaton ***(Centroptilum)***. Kimmins, 1960 : 290, text-fig. 28 [♂ Lectotype].

lacustris Eaton ***(Siphlonurus)***. Kimmins, 1960 : 272 [♂ Holotype].

lacustris Tillyard ***(Tasmanophlebia)***, 1921 : 410–412, pl. 34; text-figs 1, 2. Holotype ♂ (imago). Tas[mania], Cradle Mt., [Lake Lilla, 3000 ft], 23.i.[19]17 [reared from subimago] [*R. J. Tillyard*) / Tasmanophlebia lacustris Till., Type ♂ im[ago], R.J.T.

laetus Eaton ***(Thraulus)***. Kimmins, 1960 : 302 [♂ Holotype].

lanceolatus Kimmins ***(Tricorythus)***, 1960*a* : 353–355, text-fig. 10. Holotype ♂ (mounted as microscope preparation). Uganda, West Nile, near Laropi, 27–28.iv.1956 (*P. S. Corbet*) / Tricorythus lanceolatus Kim., ♂ Holotype.

lata Walker ***(Palingenia)***. Kimmins, 1960 : 314, text-fig. 64 [♂ Lectotype].

latipennis Walker ***(Palingenia)***. Kimmins, 1960 : 313, text-fig. 62 [♂ Lectotype].

lepidus Eaton ***(Thraulus)***. Kimmins, 1960 : 303 [♂ Holotype].

lillii Eaton ***(Deleatidium)***. Kimmins, 1960 : 298, text-fig. 43. [♂ Lectotype].

lineata Eaton ***(Ephemera)***. Kimmins, 1960 : 308 [♂ Lectotype].

longicauda Stephens ***(Baetis)***, 1836 : 63. LECTOTYPE ♂. Stephens Coll. / annulata *Schaef.*? / Baetis longicauda Stephens, ♂ Type, D. E. Kimmins det. 1953. / Baetis longicauda Steph., ♂ Lectotype, D. E. Kimmins det. 1969.

Currently placed as *Heptagenia longicauda* (Stephens).

longimanus Eaton ***(Iron)***. Kimmins, 1960 : 282 [♂ Lectotype].

loweae Kimmins ***(Centroptilum)***, 1949 : 829–830, text-figs 1–4. Holotype ♂ (in 2% formaldehyde solution). Nyasaland, L. Nyasa, Chipoka II, 27.x.[19]46 (*R. H. Lowe*) / Centroptilum loweae Kim., Type ♂.

luridipennis Walker [*nec* Burmeister] ***(Baetis)***. Kimmins, 1960 : 284.

lusitanica Eaton ***(Choroterpes)***. Kimmins, 1960 : 296, text-fig. 45. [♂ Lectotype].

[***lutea*** (L.) Stephens ***(Ephemera)***, 1836 : 57. Eaton (1871 : 9, 145) placed this as a synonym of *Heptagenia elegans* (Stephens), but I have been unable to trace the specimen(s) in the Stephens Collection.]

lutheri Müller-Liebenau ***(Baetis)***, 1967 : 48–64, 8 text-figs. Holotype ♂ (in 2% formaldehyde solution). Baetis lutheri ♂, Ahr oberhalb Altenahr (Eifel), 30 August 1967. Müller-Liebenau leg. et det.

macani Kimmins ***(Baetis)***, 1957*a* : 27–29, text-figs 1M, 2M. Holotype ♂ (in 2% formaldehyde solution, genitalia in small tube of glycerine). N. Finland, [Mt] Sanna, *c.* 800 m, [near Kilpisjärvi, [bred from nymphs in a] small [stony] lake, 15.viii.1956 (*T. T. Macan*) / Baetis macani Kim. ♂ Holotype, Genitalia in small tube of glycerine, D. E. Kimmins det. 1957.

[***macrura*** Stephens ***(Caenis)***, 1836 : 60–61. Type stated by Eaton (1871 : 9) to be missing. There is in the Stephens Coll. an example without Stephens Coll. label, but similarly mounted and labelled 'macrura *Step.*', but in view of Eaton's statement, it cannot be considered as the type of *macrura*. It has been designated the Lectotype of *Caenis interrupta* Stephens.]

maculatus Kimmins ***(Tricorythus)***, 1949 : 834–836, text-figs 8–10. Holotype ♂ (in 2% formaldehyde solution). Nyasaland, L. Nyasa, Chipoka II, 3.vii.[19]46–27.x.[19]46. Tricorythus maculatus Kim., Holotype ♂.

major Eaton ***(Teloganodes)***. Kimmins, 1960 : 304 [♀ Lectotype].

manca Eaton ***(Isonychia)***. Kimmins, 1960 : 274 [♀ Lectotype].

marginatum Kimmins ***(Dicercomyzon)***, 1957*b* : 132–136, text-figs 2, 4–8. Holotype ♂ (in 2% formaldehyde solution). Tanganyika Terr., E. Usambara Mts (*M. T. Gillies*) / Afrohyphes[1] I, ♂ imago from nymph, 2.7.[19]53, Sigi R., 700′ / Dicercomyzon marginatum Kim., ♂ Holotype, D. E. Kimmins det. 1956.

[***marginata*** (L.) Stephens ***(Ephemera)***, 1836 : 57. The specimen bearing this label does not agree with the description; it is a ♂ *Rhithrogena semicolorata* (Curtis), as stated by Eaton (1871 : 9)].

maurus Kimmins ***(Baetis)***, 1938 : 302–305, pl. 10, 5 text-figs. Holotype ♂ (in 2% formaldehyde solution). Morocco, Atlas Mountains, R. Amengous [an upper tributary of the Oumer Rebia], v.1937 (*A. H. Batten-Pooll*), Baetis maurus Kimm. [♂] Type, det. D. E. Kimmins.

melanonyx Pictet ***(Cloe)***, 1845 : 258, pl. 40, fig. 6. A neotype ♂ is being designated by Dr I. Müller-Liebenau in her revision of the European species of *Baetis* (*in press*), based upon an example from Eaton's series of *Baetis melanonyx* Pictet in BMNH.

mimus Eaton ***(Cinygma)***. Kimmins, 1960 : 278 [♂ Lectotype].

minor Stephens ***(Ephemera)***, 1836 : 60. Holotype ♀. Small green label / Stephens Coll. / Ephemera minor Stephens, det. D. E. Kimmins, 1953 / Ephemera minor Steph., ♀ Holotype, D. E. Kimmins det. 1969.

Currently placed as a synonym of *Habrophlebia fusca* (Curtis).

miunga Harker ***(Atalophlebia)***, 1954 : 246, text-figs 9, 10, 35. Holotype ♂ (in 2% formaldehyde solution). New South Wales, Armidale, 3000 ft, xi.1948 [*J. E. Harker*], Atalophlebia miunga Hark., Type.

The figures of ♂ genitalia are from a paratype; the holotype was not dissected.

monstratus Eaton ***(Hagenulus)***. Kimmins, 1960 : 300 [♂ Lectotype].

montanus Eaton ***(Callibaetis)***. Kimmins, 1960 : 290 [♀ Lectotype].

montanus Kimmins ***(Centroptilum)***, 1960*a* : 345, text-figs 4, 5. Holotype ♂ (mounted as two microscope preparations). [Uganda], Mt. Elgon, 11,600 ft, R. Sasa, 29.xii.1954 (*P. S. Corbet*). Centroptilum montanum Kim., ♂ Holotype.

munionga Tillyard ***(Coloburiscus)***, 1933 : 29–31, text-figs 44–45; pl. 1, figs 9, 10. Holotype ♂. [New South Wales], Mt Kosciusko, [Digger's Creek], 4000 ft, 12.xii.[19]31 (*R. J. Tillyard*) / Coloburiscus munionga Till., ♂ Holotype Imago.

nanatum Harker ***(Deleatidium)***, 1965 : 255, text-figs 44–46. Holotype ♂, N[ew] S[outh] W[ales], Upper Murrumbidgee River, Adaminaby, 11.xii.1936 (*R. J. Tillyard*) / Deleatidium nanatum.

The year of capture was wrongly recorded as 1926 in the original description.

natata Walker ***(Palingenia)***. Kimmins 1960 : 308 [♀ Lectotype].

nebulosus Walker ***(Palingenia)***. Spieth, 1940 : 327 [♂ Lectotype].

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[1] The quotation here of Gillies' manuscript generic name *Afrohyphes* constitutes publication in synonymy, and under Art. 11(d) of the International Code of Zoological Nomenclature (2nd Edition), the name is not thereby made available.

negi Corbet ***(Afronurus)***, 1960 : 68–70, text-figs 1–9. Holotype ♂ (in 2% formaldehyde solution). [Uganda], Sebire River, Toro, 28–30.iii.[19]59 (*P. S. Corbet*) / Notonurus negi sp. n. Cbt / ♂ Type.

nemorale Eaton ***(Centroptilum)***. Kimmins, 1960 : 290, text-fig. 29 [♂ Holotype].

nervosa Eaton ***(Choroterpes)***. Kimmins, 1960 : 303 [♂ Holotype].

nervulosa Eaton ***(Habrophlebia)***. Kimmins, 1960 : 299, text-fig. 46. [♂ Lectotype].

niger Gillies ***(Ephemerythus)***, 1960 : 35–36, text-figs 1–3, 6, 9. Holotype ♂ (in 2% formaldehyde solution). Tanganyika, [Tanga Province], Amani, 25.vi.[19]56 [*M. T. Gillies*] Ephemerythus niger sp. n., ♂ holotype [M. T. Gillies det.].

nigrescens Tillyard ***(Tasmanophlebia)***, 1933 : 18–20, text-figs 28, 29, 30B; pl. 1, figs 5, 6. Holotype ♂. N[ew] S[outh] W[ales], Mt. Kosciusko, Spencer's Creek, [5700 ft], 6000 ft, 29.i.1930 (*R. J. Tillyard*) / Tasmanophlebia nigrescens Till., Holotype ♂ Imago.

The description gives the altitude as 5700 ft, the label 6000 ft.

nitidus Eaton ***(Iron)***. Kimmins, 1960 : 283 [♂ Lectotype].

nivata Eaton ***(Heptagenia)***. Kimmins, 1960 : 284 [♂ Lectotype].

njalensis Kimmins ***(Afronurus)***, 1937 : 433–434, text-fig. 2. Holotype ♂. Sierra Leone, Njala, 9.xi.[19]30 (*E. Hargreaves*) / Afronurus njalensis Kimmins, ♂ Type, det. D. E. Kimmins.

nodularis Eaton ***(Leptophlebia)***. Kimmins, 1960 : 295, text-fig. 41 [♂ Lectotype].

norvegicus Eaton ***(Metretopus)***. Kimmins, 1960 : 286 [♂ Lectotype].

notabile Kimmins ***(Centroptilum)***, 1956 : 73–75, text-figs 3–5. Holotype ♂ (as microscope preparation in euparal). Uganda, Jinja, at light, xii.1954 (*P. S. Corbet*) / Centroptilum notabile Kim., ♂ Type.

notata Eaton ***(Ephemerella)***. Kimmins, 1960 : 304 [♂ Lectotype].

nubecularis Eaton ***(Baetis)***. Kimmins, 1960 : 289 [♂ Holotype].

nubila Kimmins ***(Heptagenia)***, 1937 : 437–438, pl. 11, fig. 2; text-fig. 4. Holotype ♂. Assam, Khasia Hills, Eaton Bequest / Heptagenia nubila Kimmins, ♂ Type, det. D. E. Kimmins.

obscura Stephens ***(Baetis)***, 1836 : 65. Holotype ♀. Stephens Coll. / obscura *Step.* / Baetis obscura Steph., ♀ Holotype, D. E. Kimmins det.

Currently placed as a synonym of *Ephemerella ignita* (Poda). The type now lacks the left fore wing.

occidentalis Eaton ***(Siphlurus)***. Kimmins, 1960 : 273 [♂ Lectotype].

occulta Walker ***(Palingenia)***. Kimmins, 1960 : 311 [♂ Lectotype].

[***ochraceum*** Stephens ***(Cloeon)***. Type not recognizable in the series of *Centroptilum lutoleum* (Müller).]

ornatus Eaton (?***Chirotonetes)***. Kimmins, 1960 : 270–271 [♀ Neotype].

pallipes Eaton ***(Spaniophlebia)***. Kimmins, 1960 : 276 [♂ Lectotype].

pallipes Walker ***(Palingenia)***. Kimmins, 1960 : 301 [♀ Lectotype].

palmyrae Gillies ***(Baetis)***, 1949 : 164–166, text-figs 2, 14, 15. Holotype ♂ (specimen so labelled by author) (in 2% formaldehyde solution). India, Poona, R. Mutha, 10.ix.[19]45 [*M. T. Gillies*], Baetis palymrae sp. n. / [M. T. Gillies det.].

par Eaton ***(Cinygma)***. Kimmins, 1960 : 278 [♂ Lectotype].

parvulus Gillies ***(Thraululus)***, 1951 : 124–125, text-figs 3, 4, 6, 8. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). [India, Central Provinces], R. Sonar, nr Saugor, 11.iii.[19]45 [*M. T. Gillies*], Thraululus parvulus sp. n. [M. T. Gillies det.].

pennata Stephens ***(Caenis (Brachycercus))***, 1836 : 61. LECTOTYPE [?sex]. pennata *Step.* / Stephens Coll. / Brachycercus pennata Steph., Lectotype, D. E. Kimmins det. 1969.

Type somewhat damaged. Apex of left wing and apex of abdomen missing, only a hind leg present. Synonym of *Brachycercus harrisella* Curtis.

pennulatum Eaton ***(Centroptilum)***. Kimmins, 1960 : 290 [♂ Lectotype].

perpusilla Walker ***(Caenis)***. Kimmins, 1960 : 305. [♂ Holotype].

perscitus Eaton ***(Ameletus)***. Kimmins, 1960 : 270 [♀ Holotype].

picea Kimmins ***(Caenis)***, 1947 : 99–100, text-fig. 14. Holotype ♂ (in 2% formaldehyde solution). [India], Bengal, Calcutta, reservoir of Baranagar[-Kamarhati] Waterworks 29.xii.1945 (*D. E. Kimmins*), Caenis picea Kim., Type ♂.

pictiventris McLachlan ***(Ephemera)***. Kimmins, 1960 : 308 [♀ Lectotype].

pictus Eaton ***(Baetis)***. Kimmins, 1960 : 290 [♂ Lectotype].

pictus Gillies ***(Ephemerythus)***, 1960 : 36, text-figs 4, 7, 10, 11. Holotype ♂ (in 2% formaldehyde solution). Tanganyika, [Tanga Province], Sigi R., Amani, 20.ix.[19]54 [*M. T. Gillies*], Ephemerythus pictus sp. n., ♂ Holotype [M. T. Gillies det.].

pierda Harker [***Atalophlebia)***, 1954 : 246, text-figs 11, 12, 37. Holotype ♂. N[ew] S[outh] W[ales], Hornsby, bred 21.ix.[19]17 (*R. J. Tillyard*) / Abdomen in slide cabinet / Genitalia, slide V / Atalophlebia pierda [J.E.H. handwriting].

piscina Kimmins ***(Caenis)***, 1947 : 99, text-fig. 13. Holotype ♂. [Bengal], Calcutta distr., x.1945 (*D. E. Kimmins*) / Caenis piscina Kim., ♂ Type.

praepedita Eaton ***(Leptophlebia)***. Kimmins, 1960 : 302 [Lectotype].

primanus Eaton ***(Thraulus)***. Kimmins, 1934 : 342 [designation of ♂ Lectotype (as 'type')].

[***procera*** Harker ***(Kirrara)***, 1954 : 259–260, text-figs 43, 58, 59. The ♂ holotype has not been traced in our collection, the ♀ allotype bears a BM Type-label.]

pseudorufulum Kimmins ***(Procloeon)***, 1957 : 31–32, text-figs A, B. Holotype ♂ (in 2% formaldehyde solution). [England], Hereford, Kington, R. Arrow, 17–20.vi.1947 (*D. E. Kimmins*) / Procloeon pseudorufulum Kim., ♂ Type, D. E. Kimmins det. 195–.

pulcher Ulmer ***(Afronurus)***, 1930 : 507–511, text-figs 26–28. LECTOTYPE ♂ (subimago) Abyssinia, Muger River Valley, *c.* 5500 ft, 29.xii.1926 (*H. Scott*) / Afronurus pulcher Ulmer ♂ [subimago] Lectotype, D. E. Kimmins det. 1969.

Currently placed as a synonym of *Afronurus collarti* Navás.

pulcherrima Eaton ***(Ephemera)***. Kimmins, 1960 : 308 [♀ Holotype].

pulchrum Eaton ***(Centroptilum)***. Kimmins, 1960 : 290, text-fig. 30 [♂ Lectotype].

purpurea Gillies ***(Isca)***, 1951 : 128–130, text-figs 15–22. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). Hong Kong, San Wai, 30.iii.1947 [*M. T. Gillies*], Isca purpurea, ♂ Holotype.

pusillum Harker ***(Deleatidium)***, 1956 : 253, text-figs 40, 51, 52. Holotype ♂. N[ew] S[outh] W[ales], Bolaro, 10.ii.1936 (*R. J. Tillyard*) / Deleatidium pusillum [J.E.H.].

♂ genitalia mounted in canada balsam and attached to type-pin.

[***quaesitor*** Eaton ***(Ecdyurus)***. Kimmins, 1960 : 279–280 [Type presumed lost]].

[***remotus*** Walker ***(Baetis)***. Kimmins, 1960 : 274 [Type presumed lost]].

rivulorum Eaton ***(Caenis)***. Kimmins, 1960 : 305 [♂ Lectotype].

robusta Eaton ***(Caenis)***. Kimmins, 1960 : 305 [♂ Lectotype].

rosea Stephens ***(Ephemera)***, 1836 : 59. LECTOTYPE ♂. Small green label / Stephens Coll. / rosea *Step.* / Ephemera rosea Steph., ♂ Lectotype, D. E. Kimmins det. 1969.

Placed by Eaton as a synonym of *Ephemerella ignita* (Poda). The type has been damaged by insect pests, and part of the abdomen, including the anal appendages, is missing.

rothschildi Navás ***(Ecdyonurus)***, 1929 : 59–60, text-fig. 2. Holotype ♂. [Algeria], Biskra, March 13–April 8, 1914 (*W. R[othschild] & E. H[artert]*) / Ecdyonurus Rothschildi ♂ Nav., P. Navás S. J. det. / Red label 'Typus'.

[***rufescens*** Stephens ***(Ephemera)***, 1836 : 59. Type not recognizable with certainty.

Eaton placed this species as a synonym of *Ephemerella ignita* (Poda) but the example bearing the label 'rufescens' was removed from *Ephemerella ignita* by Blair and placed as *Leptophlebia* sp. It is a female, possibly *Leptophlebia marginata*. This appears to be a case of the label having been changed since Eaton's time. I do not propose to make a lectotype.]

rufivenosa Eaton ***(Leptophlebia)***. Kimmins, 1960 : 302 [♀ Lectotype].

salvini Eaton ***(Baetis)***. Kimmins, 1960 : 289 [♂ Lectotype].

salvini Kimmins ***(Heptagenia)***, 1934 : 351–353, text-figs 16–17. Holotype ♂. Mexico, N. Sonora (*Morrison*) / B. C. A. Neuropt., Genus ? near Cinygma sec Eaton / Heptagenia salvini sp. n. Type ♂, det. D. E. Kimmins.

salviniae Eaton ***(Homoeoneuria)***. Kimmins, 1960 : 276 [♂ Lectotype].

samoense Tillyard ***(Cloeon)***, 1928 : 45–47, text-figs 1–2. Holotype ♂. Samoan Is., Upolu, Vailima, 25.x.1924 (*P. A. Buxton & G. H. Hopkins*) / Cloeon samoense Till., ♂ imago holotype, R.J.T. / Abdomen in slide cabinet.

scambus Eaton ***(Baetis)***. Kimmins, 1960 : 289 [♂ Topotype].

scita Walker ***(Baetis)***. Kimmins, 1960 : 295, text-fig. 40 [♂ Lectotype].

scitulum Kimmins ***(Cloeon)***, 1955 : 863–865, text-figs 1a–c. Holotype ♂ (mounted as microscope preparation in euparal). Nyasaland, Chiromo, 26.vii.1952 (*Lewis Berner*) / Cloeon scitulum Kim., ♂ Holotype.

scotti Eaton ***(Hagenulus)***. Kimmins, 1960 : 300, text-fig. 48 [♂ Holotype].

[***scotti*** Tillyard ***(Caenis)***, 1936 : 56–58, text-figs 31–33. Type mounted whole on slide, possibly in Canberra, unless slides in our collection have wrong locality data. *C. scotti* Tillyard is a homonym of *C. scotti* Ulmer, 1930 and has been renamed *C. tillyardi* Lestage].

scotti Ulmer ***(Caenis)***, 505–507, text-fig. 25. LECTOTYPE ♂. Abyssinia, near Addis Allem, *c.* 8000 ft, 19.ix.1926 (*H. Scott*) / Caenis Scotti Ulm., Typen / Caenis scotti Ulm., ♂ Lectotype, D. E. Kimmins det. 1969.

semicastanea Gillies ***(Habrophlebiodes)***, 1951 : 125, text-figs 9, 10, 13. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). [India], Poona, R. Mutha, 20.ix.[19]45 [*M. T. Gillies*] / Habrophlebiodes semicastanea sp. n. [*M. T. Gillies* det.].

Currently placed in the genus *Masharikella*.

septimum Gillies ***(Cloeon)***, 1949 : 174–175, text-fig. 21. Holotype ♀ (so labelled by author) (in 2% formaldehyde solution). Malaya, Johore, Batu Pahat, 25.iv.[19]46 [*M. T. Gillies*], Cloeon septimum sp. n. ♂ Holotype [M. T. Gillies det.].

serica Eaton ***(Ephemera)***. Kimmins, 1960 : 309, text-fig. 53 [♂ Lectotype].

sibirica McLachlan ***(Palingenia)***. Kimmins, 1960 : 314–315, text-fig. 65 [♂ Holotype].

siccum Gillies ***(Cloeon)***, 1949 : 174. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). India, C[entral] P[rovinces], branch of the River Sonar, where it crosses the Saugor-Damoh road at the 12th milestone, 11.iii.[19]45 [*M. T. Gillies*], Cloeon siccum sp. n. [M. T. Gillies det.].

simile Eaton ***(Cloeon)***. Kimmins, 1960 : 292 [♂ Lectotype].

simulans Walker ***(Ephemera)***. Kimmins, 1960 : 309 [♂ Holotype].

sinensis Walker ***(Caenis)***. Kimmins, 1960 : 292 [♂ Holotype almost completely destroyed].

sogeriensis Harker ***(Baetis)***, 1954 : 264, text-figs 72–74. Holotype ♂ (in 2% formaldehyde solution). New Guinea, Sogeri, 1.vi.1947 (*R. Wharton*), Baetis sogeriensis Hark., Type.

solitarius Gillies ***(Baetis)***, 1949 : 170, figs 6, 11. Holotype ♂ (in 2% formaldehyde solution). India, N. Bengal, Mirik, 4000 ft, 20.ix.[19]46 [*M. T. Gillies*], Baetis solitarius sp. n. ♂ holotype [M. T. Gillies det.].

southi Blair ***(Haplogenia)***, 1929 : 255, text-figs 2–4. Holotype ♂. [Middlesex], Stanmore, 4.vi.[19]20 [*R. South*] / Left wings in slide cabinet / Haplogenia southi Blair, Type, det. K. G. Blair.

Currently placed as a synonym of *Arthroplea congener* Bengtsson.

stenopteryx Eaton ***(Centroptilum)***. Kimmins, 1960 : 291, text-fig. 31 [♂ Lectotype].

stigma Stephens ***(Ephemera)***, 1836 : 56–57. Holotype ♂. Stephens Coll. / stigma *Step.* / I believe this to be the type of Ephemera stigma Stephens, in spite of the slightly banded setae. D. E. Kimmins det. 1953 / Ephemera stigma Stephens, ♂ Holotype, D. E. Kimmins det. 1969.

Placed by Eaton as a synonym of *Leptophlebia marginata* (Linnaeus).

strigata Eaton ***(Ephemera)***. Kimmins, 1960 : 309, text-fig. 55 [♂ Lectotype].

strigata Eaton ***(Leptophlebia)***. Kimmins, 1960 : 299 [♀ Holotype].

subfusca Stephens ***(Baetis)***, 1836 : 64. Holotype ♀. Stephens Coll. / subfusca *Step.* / Baetis subfusca Steph., ♀ Holotype, D. E. Kimmins det. 1969.

Probably a synonym of *Ecdyonurus dispar* (Curtis).

subfuscus Kimmins ***(Ecdyonurus)***, 1937 : 439–440, text-fig. 6. Holotype ♂. Assam, Khasia Hills, Eaton Bequest / Ecdyonurus subfuscus Kimmins, ♂ Type, det. D. E. Kimmins.

Holotype with apex of abdomen cleared and mounted in canada balsam.

submarginata Stephens ***(Ephemera)***, 1836 : 58. LECTOTYPE ♂. Stephens Coll. (with small green label) / NB. Right f.w. is *Ephemerella ignita*, det. K. G. Blair / ? Type of Ephemera submarginata Steph., D. E. Kimmins det. 1953 / Ephemera submarginata Stephens, ♂ Lectotype, D. E. Kimmins det. 1969.

The head of the lectotype is missing. Currently placed in the genus *Paraleptophlebia*.

subnotatus Eaton ***(Ameletus)***. Kimmins, 1960 : 270 [♂ Lectotype].

tabularis Eaton ***(Atalophlebia)***. Kimmins, 1960 : 294 [Type not located].]

talcosa Stephens ***(Ephemera)***, 1836 : 57. Holotype ♀. Stephens Coll / talcosa / Ephemera talcosa Stephens, ♀ Holotype, det D E. Kimmins, 1969.

Placed by Eaton as a synonym of *Leptophlebia marginata* (L.).

taprobanes Walker ***(Baetis)***. Kimmins, 1960 : 296, text-fig. 37 [♂ Holotype].

tarsalis Eaton ***(Atopopus)***. Kimmins, 1960 : 177, text-flag. 11 (♂ Lectotype].

tasmaniae Tillyard ***(Cloeon)***, 1936 : 53–55. Holotype ♂ (in 2% formaldehyde solution). Cloeon tasmaniae Till., Holotype ♂ Tas[mania], Stewarton, 8.ii.[19]33 (*Eric Scott*).

tenax Eaton ***(Baetis)***. Kimmins, 1960 : 289 [♂ Topotype].

tessellatum Walker ***(Baetis)***. Kimmins, 1960 : 284 [♀ subim. Holotype].

thurbonis Gillies ***(Baetis)***, 1949 : 168–170, text-figs 5, 16. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). [India], N. Bengal, Mirik, [Thurbo Tea Estate], 4000 ft, 20.ix.[19]46 [*M. T. Gillies*], Baetis thurbonis sp. n. [M. T. Gillies det.].

tigroides Gillies ***(Baetis)***, 1949 : 167–168, text-figs 4, 8, 9. Holotype ♂ (so labelled by author) (in 2% formaldehyde solution). [India], N. Bengal, Mirik, 4000 ft, 21.ix.[19]46 [*M. T. Gillies*], Baetis tigroides sp. n. [M. T. Gillies det.].

tinctus Kimmins ***(Tricorythus)***, 1956 : 82–84, text-figs 19–21. Holotype ♂ (in 2% formaldehyde solution). Uganda, Owen Falls Dam, at light, 24.iv.1954, (*P. S. Corbet*) / Tricorythus tinctus Kim., ♂ Type, D. E. Kimmins det. 1954.

torrentis Gillies ***(Masharikella)***, *in* Peters, Gillies and Edmunds, 1964 : 120, text-figs 2–3, 10, 13–22. Holotype ♂ (in 2% formaldehyde solution). Tanganyika, Amani, 2000–3000 ft, East Usambara Mountains, 20.iv.1958 (*M. T. Gillies*), / Masharikella torrentis Det. 1964, W. L. Peters / Holotype 1964.

torrentis Kimmins ***(Ecdyonurus)***, 1942 : 492–497, figs 2T, 3T, 4–5. Holotype ♂. N. Lancs. Blelham Fishpond Beck, 20.v.1941 (*D. E. Kimmins*) / Ecdyonurus torrentis Kim., [♂] Type, det. D. E. Kimmins 16/2/[19]41.

torrentium Eaton ***(Epeorus)***. Kimmins, 1960 : 282, text-fig. 15 [♂ Lectotype].

torridus Walker ***(Baetis)***. Kimmins, 1960 : 284 [♀ Holotype].

trailiae Eaton ***(Spaniophlebia)***. Kimmins, 1960 : 277 [♂ Lectotype].

trimeniana McLachlan ***(Oligoneuria)***. Kimmins, 1960 : 275, text-fig. 7. [♀ Holotype].

tristis Harker ***(Jappa)***, 1954 : 257–259, text-figs 62, 63, 66. Holotype ♂. Tas[mania], Cradle Mt., 21.i.[19]17 (*R. J. Tillyard*) / Abdomen in slide cabinet / Jappa tristis [J.E.H.] / Genitalia slide XI.

The holotype now lacks all legs and left fore wing.

tropicalis Gillies ***(Euthraulus)***, 1957 : 44–45, text-figs 2–5, 8–9. Holotype ♂ (in 2% formaldehyde solution). Tanganyika, [Tanga Province, *c.* 12000 ft], Mombo, x.[19]54 [*M. T. Gillies*], Euthraulus tropicalis, ♂ holotype [M. T. Gillies det.].

tuhla Harker ***(Atalophlebia)***, 1954 : 247, text-figs 1, 2, 3, 4. Holotype ♂. N[ew] S[outh] W[ales], Kiandra, 15.i.[19]30 (*R. J. Tillyard*) / Atalophlebia tuhla [J.E.H.] / Abdomen in slide cabinet / Genitalia, slide III.

typicus Eaton ***(Siphlurus)***. Kimmins, 1960 : 274 [♂ Lectotype].

ugandanus Kimmins ***(Afronurus)***, 1956 : 71–73, text-fig. 1. Holotype ♂ (in 2% formaldehyde solution, apex of abdomen as microscope preparation). Uganda, Entebbe, 8.iii.1954 (*R. Hartland-Rowe*) / Afronurus ugandanus Kim., ♂ Type, D. E. Kimmins det. 195–.

umbratilis Eaton ***(Habrophlebia)***. Kimmins, 1960 : 300, text-fig. 47 [♂ Lectotype].

usambarae Gillies ***(Euthraulus)***, 1957 : 46–48, text-figs 6–7, 10–11. Holotype ♂ (in 2% formaldehyde solution). Tanganyika, E. Usambara, Mpandeni, 20.vi.[19]55 [*M. T. Gillies*], Euthraulus usambarae, ♂ holotype [M. T. Gillies det.].

vaciva Eaton ***(Leptophlebia)***, Eaton. Spieth. 1941 : 96 [♂ Lectotype].

valens Eaton ***(Thraulus)***. Kimmins, 1934 : 344 [designation of ♂ Lectotype (as 'type)].

venusta Eaton ***(Hexagenia)***. Spieth, 1940 : 88 [♂ Lectotype].

venustulus Eaton ***(Baetis)***. Kimmins, 1960 : 289 [♂ Lectotype].

versicolor Eaton ***(Atalophlebia)***. Kimmins, 1960 : 296, text-fig. 39 [♂ Lectotype].

versicolor Eaton ***(Thraulus)***. Kimmins, 1960 : 303 [♂ Lectotype].

vicaria Walker ***(Baetis)***. Kimmins, 1960 : 284 [♂ Holotype].

viridescens Walker ***(Palingenia)***. Kimmins, 1960 : 311 [♀ Holotype].

viridis Kimmins ***(Cloeon)***, 1947 : 98. Holotype ♀ (in 2% formaldehyde solution). [Bengal], Calcutta distr., x.1945 (*D. E. Kimmins*), Cloeon viridis Kim., Type ♀.

vitrea Walker ***(Palingenia)***. Kimmins, 1960 : 283 [♀ Holotype, subimago].

volitans Eaton ***(Heptagenia)***. Kimmins, 1960 : 282 [♂ Lectotype].

wakefieldi McLachlan ***(Oniscigaster)***. Kimmins, 1960 : 272, text-fig. 2 [♂ Lectotype].

walkeri Eaton ***(Ephemerella)***. Kimmins, 1960 : 304 [Type as for *Ephemerella fuscata*].

zelleri Eaton ***(Ecdyurus)***. Kimmins, 1942*a* : 125 (♂ Lectotype).

zettana Kimmins ***(Ephemera)***, 1937 : 431–433, pl. 11, fig. 1; text-fig. 1. Holotype ♂ (in 2% formaldehyde solution). Montenegro, R. Zetta, 1933 (*A. H. Batten Pooll*) / Ephemera zettana Kimmins, Type ♂, det. D. E. Kimmins.

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A CATALOGUE OF THE MEMBRACID TYPES (HOMOPTERA: MEMBRACIDAE) IN THE BRITISH MUSEUM (NATURAL HISTORY)

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P. S. BROOMFIELD

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BY

PETER SAINSBURY BROOMFIELD

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THE BRITISH MUSEUM (NATURAL HISTORY)

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A CATALOGUE OF THE MEMBRACID TYPES (HOMOPTERA: MEMBRACIDAE) IN THE BRITISH MUSEUM (NATURAL HISTORY)

By PETER S. BROOMFIELD

SYNOPSIS

The purpose of this paper is to provide a record of the Membracid holotypes, lectotypes and neotypes present in the collection of the British Museum (Natural History) and to designate additional lectotypes where necessary. The present totals are: holotypes 492, lectotypes 446 (of which all but one are designated in this paper), and 1 neotype.

IN the following list the taxa are arranged alphabetically by specific name. This is followed in each case by the genus in which it was described, the author and a coded reference to its original description. The code is the same as that used in Metcalf's bibliography of the Membracoidea (1963), in which full bibliographic references are given. The complete references to works published after 1955 are given at the end of the present paper. The coded reference is followed by the kind of type-specimen and a description of the data labels. The extent of each label is indicated by quotation marks (' . . . . ') and the individual lines of the label are separated by semicolons (;). The condition of the type-specimen, if damaged, is noted.

Lectotypes designated in this paper are indicated thus : LECTOTYPE. These specimens are labelled ' LECTOTYPE ' and with the name of the taxon and its author, followed by ' P. S. Broomfield 1969 ' : such labels are not quoted in the text of the present paper. Additional syntypes, where present in the collection, are also noted : these specimens are now labelled as paralectotypes. In certain species the number of specimens in the type-series was clearly indicated by the author (e.g. Walker, 1851a & 1858b). Where such species were described from a single specimen it has been possible to label this as the holotype. In the absence of information on the number of specimens in the type-series (e.g. Walker, 1858a) single specimens have been desginated as lectotypes. Lectotypes have not been selected in those cases in which the greater part of the type-series is known to be located in another institution, or where the author has clearly indicated that the type is among material lodged elsewhere.

The label ' Type ' referred to in this catalogue is a circular printed label used throughout the collection. It is edged in red except in the case of Walker's types where it is edged in green. Specimens bearing these labels have been regarded by common usage as types, though, as in most cases they were not so labelled by the author of the species, such an assumption is not always justified. However, since in most cases the same specimen also bears the author's own taxonomic label and is in every way consistent with being the specimen before him at the time of description, it is regarded here as being the holotype, or, where there is more than one specimen in the series, is designated lectotype. Instances where a specimen so labelled is not regarded by the writer as being eligible for such designation are indicated in the text.

The taxonomic labels printed in block capitals on some of Walker's types have been cut from his British Museum catalogues. Those including a number (e.g. ' 8. ENTYLIA ACCISA,') are cut from the 1851a catalogue, and those without a number (e.g. ' CENTROTUS ACER.') from the 1858b catalogue. It is not known who placed these labels on the specimens. The majority of Fowler's taxa described in the Biologia Centrali-Americana bear a label which states : ' B.C.A. Homopt. II ' and the name of the taxon. To save space such labels are here referred to simply as the ' B.C.A. label '.

Many errors and omissions in some of the earlier descriptions are not commented upon in the present paper, though those that may lead to confusion at generic or higher level are noted. Some of the illustrations in certain works are also misleading and where necessary redescriptions of these will follow later.

I should like to thank Dr W. J. Knight of the British Museum (Natural History) for his guidance in the preparation of this catalogue, and Mr A. L. Capener of the Plant Protection Research Institute, Pretoria, for reading the manuscript and for his helpful criticisms.

abbreviata (Polyglypta) Walker, 1858b : 136. Holotype ♀ with labels: 'Type' and 'Mexico; 53; 86' and 'POLYGLYPTA ABBREVIATA.'.

abcisus (Heteronotus) Walker, 1851a : 595. LECTOTYPE ♀ with labels: 'Type' and 'Para; 49.; 2' and '16. HETERONOTUS ABCISUS'.

Of the four other specimens originally in the type-series, only one female now remains in the collection.

abdullah (Leptocentrus) Distant, 1916e : 290. Holotype ♀ with labels: 'Type' and 'Annandale & Robinson.; Siamese Malay States.; 1903–127.' and 'Bulsit Besar.; 2,500 ft; Siam.; Malay States; 27/8/01' and 'Leptocentrus; abdullah; type Dist.'.

accisa (Entylia) Walker, 1851a : 548. Holotype ♀ with labels: 'Type' and 'N. Amer' and 'Ent. Club.; 44–12.' and '8. ENTYLIA ACCISA,'.

acer (Centrotus) Walker, 1858b : 163. Holotype ♀ with labels: 'Type' and 'Malacca; 56; 140' and 'CENTROTUS ACER.'.

The posterior pronotal process is broken.

acuminata (Membracis) Fabricius, 1775a : 675. LECTOTYPE with labels: 'Pen[n]sylvania' and '63; 47' and associated with it, though not mounted on the same pin, 'Type' and 'Membr. acuminata; Fab. Entom. p. 675. 5.'.

The abdomen and left tegmen are missing. The specimen is from the Joseph Banks Collection and the 'Type' label is handwritten.

acuminata (Oxyrhachis) Capener, 1962 : 90. Holotype ♀ with labels: 'HOLOTYPE' and 'DRAWING; No 419; A. L. CAPENER.' and 'Oxyrhachis; acuminata; CAPENER; 1962.' and 'Ceres,; Cape Province; Febr. 1921.' and 'S. Africa.; R. E. Turner.; Brit. Mus.; 1921–115.'.

The allotype and two other male paratypes are also in the collection.

acuticornis (Periaman) Funkhouser, 1936d : 187. Holotype ♀ with labels: 'Type' and 'MALAYA; Kuala lumpur.; Sel: Museum; Nr: L. Gardens.; Coll. H. M. Pendlebury.; 29.12.1935' and 'Periaman; acuticornis; HOLOTYPE; W. D. Funkhouser'.

There are only two discoidal cells in the tegmen, not three as described. The allotype and two other paratypes, one male, one with the abdomen lost, are also in the collection.

***acutus* (*Hebeticoides*)** Fowler, 1894c : 53. Holotype ♂ with labels: 'Type' and 'Pancina,; Vera Paz.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hebeticoides; acutus Fowler.; TYPE' and the B.C.A. label.

***addahensis* (*Gargara*)** Distant, 1915c : 489. LECTOTYPE ♂ with labels: 'Type' and 'Addah.; Gold Coast.; N. J. Palmer.; 1912. 142.' and 'Gargara; addahensis; type Dist.'.

There are four other male specimens from the type-series in the collection.

***aduncus* (*Leptocentrus*)** Buckton, 1903a : 236. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Leptocentrus; aduncus Type; Buckt.'.

One of three specimens glued to the same card, the lectotype is indicated by an adjacent red ink spot. The other two specimens are female and one is badly damaged.

***aenea* (*Gargara*)** Distant, 1915c : 491. LECTOTYPE ♀ with labels: 'Type' and 'Uganda Prot.; Entebbe.; 1–11 Sep. 1911.; S. A. Neave.' and '1912–193' and 'Gargara; aenea; type Dist.'.

There are four other females from the type-series in the collection.

***aeneosparsa* (*Aconophora*)** Butler, 1878a : 348. Holotype ♀ with labels: 'Type' and 'Mex.; 56.; 143' and 'A. xneosparsa [sic]; Butler Type.'.

***aeneus* (*Tricentrus*)** Distant, 1916a : 167. LECTOTYPE ♀ with labels: 'Type' and 'Ind. Mus.; Kurseong; 5000 ft.; E. Himalayas; 9.ix.09; N.A.' and 'Tricentrus; aeneus; Dist.; type'.

There are six other females from the type-series in the collection.

***aequalis* (*Smilia*)** Walker, 1858b : 133. Holotype ♀ with labels: 'Type' and 'Ega; Brazil; 51.; 43' and 'SMILIA AEQUALIS.'.

***aethiops* (*Heniconotus*)** Butler, 1878a : 359. Holotype ♀ with labels: 'Type' and 'Ecuador.; 73.; 18.' and 'Heniconotus; aethiops; Butler Type.'.

***affinis* (*Aphetea*)** Haviland, 1925a : 252. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; July, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Aphetea; affinis; Haviland.'.

The tegmina are missing. There are four other females from the type-series in the collection.

***affinis* (*Darnoides*)** Fowler, 1895c : 82. LECTOTYPE ♀ with labels: 'Type' and 'David,; Chiriqui.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Darnoides; affinis Fowler; TYPE.' and 'like Darnoides; brunnea &; nigroapica but not' and the B.C.A. label.

There is another female from the type-series in the collection.

***affinis* (*Gargara*)** Distant, 1908g : 61. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Gargara; affinis; type Dist.'.

There is another male from the type-series in the collection.

***affinis* (*Parayasa*)** Distant, 1916a : 179. Holotype ♀ with labels: 'Type' and '207' and 'Nandidrug; S. India; T. V. Campbell' and 'S. India.; E. A. Butler.; 1915–60.' and 'Parayasa; affinis; type Dist.'.

***affinis* (*Poppea*)** Fowler, 1895d : 100. Holotype ♂ with labels: 'Type; H.T.' and 'Teleman,; Vera Paz.; Champion.' and 'Poppaea [sic]; affinis Fowler; TYPE.' and the B.C.A. label.

***affinis* (*Sertorius*)** Distant, 1916d : 25. Holotype ♀ with labels: 'Type' and 'Sydney: N.S.W.; 1900–1903.; J. J. Walker.; 1910–384.' and 'Sertorius; affinis; type Dist.'.

***affinis* (*Sphongophorus*)** Fowler, 1894c : 29. LECTOTYPE ♂ with labels: 'Type' and '♂' and 'Quiche Mts.,; 7–9000 ft.; Champion.' and 'Sphongophoros; affinis. Fowler; TYPE' and 'Brit. Mus.; 1904–55.' and the B.C.A. label.

There is another male from the type-series in the collection.

***affixa* (*Parayasa*)** Distant, 1916a : 178. Holotype ♀ with labels: 'Type' and 'Nilgiri Hills,; S. India.; T. V. Campbell.' and 'S. India.; E. A. Butler.; 1915–60.' and 'B22' and 'Parayasa; affixa; type Dist.'.

***africanus* (*Platybelus*)** Distant, 1916c : 325. LECTOTYPE ♀ with labels: 'Type' and 'Cameroons.; Escalera.; 1903–355.' and 'Platybelus; africanus; type Dist.'.

There are four other females from the type-series in the collection.

agnatus (Emphusis) Distant, 1916c : 319. Holotype ♀ with labels: 'Type' and '68.4' and 'Chaut; Mouhot' and 'Emphusis; agnatus.; type Dist.'.

agrestis (Oxyrhachis) Capener, 1962 : 39. Holotype ♀ with labels: 'HOLOTYPE' and 'DRAWING' No 447.' and 'Oxyrhachis; agrestis; CAPENER; 1962' and 'Zululand:; Eshowe.; 6–31. V. 1926.; and 'S. Africa.; R. E. Turner.; Brit. Mus.; 1926–232.'.

The allotype and nine other paratypes are in the collection also.

aguae (Polyglypta) Fowler, 1895f : 126. LECTOTYPE ♂ with labels: 'Type' and '♂' and 'V. de Agua,; 85–10500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Polyglypta; aguae. Fowler; TYPE.' and the B.C.A. label.

There is one other male from the type-series in the collection.

alatus (Centrotypus) Buckton, 1903a : 237. Holotype with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Centrotypus; alatus; type Buckt.' and 'perakensis; Dist.; n. nom'.

The abdomen and one wing and tegmen are lost.

alba (Leptocentrus) Funkhouser, 1929a : 470. Holotype ♀ with labels: 'Brit. Mus.; 1930–324.' and 'N. BORNEO.; BETTOTAN.; NR. SANDAKAN.; Aug: 9th 1927.; C. B. K. & H. M. P.; F.M.S.; Museums.' and 'HOLOTYPE; Leptocentrus alba; W. D. Funkhouser'.

albescens (Leptocentrus) Funkhouser, 1935d: 427. Holotype ♀ with labels: 'Type; H.T.' and 'SIERRA LEONE; NJALA; Bauninia; 24.ix.32; E. HARGREAVES' and 'Leptocentrus albescens; HOLOTYPE; W. D. Funkhouser'.

The allotype is also in the collection.

albidorsata (Telamona) Fowler, 1896d: 145. Holotype ♂ with labels: 'Type' and 'Rinconada,; Vera Cruz.; Schaus.' and 'Brit. Mus; 1904–55.' and 'Telamona; albidorsata; Fowler. TYPE.' and the B.C.A. label.

albidum (Enchophyllum) Fowler, 1894b : 7. Holotype ♀ with labels: 'Type' and 'S. Geronimo,; Guatemala.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Enchophyllum; albidum Fowler; TYPE' and the B.C.A. label.

albidus (Centrotus) Walker, 1870a : 188. LECTOTYPE ♂ with labels: 'Type' and 'M' and '68.4' and 'Wallace' and 'albidus'.

albifrons (Hypamastris) Fowler, 1895d : 93. Holotype ♂ with labels: 'Type; H.T.' and 'S. Geronimo,; 3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Amastris Stal; n.s. or Stali Gdng' and 'Hypamastris; albifrons Fowler.; TYPE.'.

albigutta (Centrotus) Walker, 1870a : 184. LECTOTYPE ♀ with labels: 'Type' and 'N' and '68.4' and 'N Gui; Wallace' and 'albigutta'.

albilatus (Centrotus) Walker, 1870a : 184. LECTOTYPE ♀ with labels: 'Type' and 'N' and '68.4' and 'N Gui; Wallace' and 'albilatus.'.

albipes (Tricentrus) Funkhouser, 1927b : 4. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Fort de Kock; (Sumatra) 920M.; 1926; leg. E. Jacobson.' and 'HOLOTYPE; Tricentrus albipes; ♀ W. D. Funkhouser'.

alboapicata (Gargara) Distant, 1908g : 66 LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Gargara; albopicata [sic]; type Dist.'.

There are two females from the type-series in the collection also.

albolinea (Gargara) Funkhouser, 1927h : 255. Holotype ♀ with labels: 'Brit. Mus.; 1930–324.' and '147' and 'MALAY PENIN:; Selangor, F.M.S.; Kuala Lumpur; April 5th 1926.; H. M. Pendlebury.; EX COLL:; F.M.S.; MUSEUM.' and HOLOTYPE; Gargara albolinea; W. D. Funkhouser'.

albolineatum (Anchon) Buckton, 1903a : 216. LECTOTYPE ♀ with labels: 'Type' and 'cv' and 'B.; 259' and 'Distant Coll.; 1911–383.' and 'Anchon; albolineatum.' and 'Monocentrus; bipennis Walk.; Det. CAPENER.; 1963.'.

albomacula (Gargara) Funkhouser, 1927h : 254. Holotype ♂ with labels: 'Brit. Mus.; 1930–324.' and '146' and 'MALAY PENIN:; Selangor, F.M.S.; Kuala Lumpur; on "Bauhinia" sp; March 24th 1926; H. M. Pendlebury.; EX COLL:; F.M.S.; MUSEUM.' and 'Gargara; albomacula; HOLOTYPE; W. D. Funkhouser'.

albomaculatus (Indicopleustes) Distant, 1908g : 25. LECTOTYPE ♂ with labels: 'Type' and '1285' and 'Peradeniya,; Ceylon, 12.02' and 'Indicopleustes; albomaculatus; type Dist.'.

There are two other males and a female from the type-series in the collection.

albomaculatus (Otinotus) Distant, 1916a : 159. LECTOTYPE ♂ with labels: 'Type' and '386' and 'Nilgiri Hills; S. India; T. V. Campbell' and 'Otinotus; albomaculatus; type Dist.'.

There are eight other specimens from the type-series in the collection.

albomaculatus (Tricentrus) Distant, 1908g : 56. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Tricentrus; albomaculatus; type Dist.'.

There is one other male from the type-series in the collection.

albonotata (Leptocentrus) Distant, 1916e : 289. Holotype ♀ with labels: 'Type' and 'Pusa Coll.; 1915–164.' and '31.viii.08; on coffee; 4600 ft; Hillgrove; Nilgiris Y.R.' and 'Leptocentrus; albonotata; type Dist.'.

albosignatum (Pogon) Distant, 1916a : 161. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Hakjala; Ceylon 3.07' and 'Pogon; albosignatum; type Dist.'.

There is one other male from the type-series in the collection.

albosignatus (Otinotus) Distant, 1916d : 40. Holotype ♀ with labels: 'Type' and 'Queensland.; F. P. Dodd.; 1907–54.' and 'Otinotus; albosignatus; type Dist.'.

The head is missing.

albospinosus (Heteronotus) Haviland, 1925a : 245. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; September, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Heteronotus; albispinosus [sic]; Haviland.'.

allabens (Tricentrus) Distant, 1916a : 166. LECTOTYPE ♀ with labels: 'Type' and '1998; 21' and 'Distant Coll.; 1911–383.' and 'Ind. Mus.; Kurseong; E. Himalayas; alt. 4700–5000 ft.; 24.vi.10.; Annandale' and 'Tricentrus; allabens; type Dist.'.

There is another female from the type-series in the collection.

alta (Ceresa) Walker, 1851a : 529. Holotype ♀ with labels: 'Type' and '1892' and '12' and '15. CERESA ALTA,'.

Both tegmina are missing.

alta (Membracis) Walker, 1851a : 476. Holotype ♀ with labels: 'Type' and 'Vene-; zuela; 47; 24' and '11. MEMBRACIS ALTA.'.

The right wing and tegmen are lost.

alticeps (Centrotus) Walker, 1870a : 183. LECTOTYPE ♀ with labels: 'Type' and 'Aru' and '68.4' and 'alticeps'.

altifrons (Centrotus) Walker, 1851a : 608. Holotype ♀ with labels: 'Type' and '15' and 'Congo; 43; 56' and '21. CENTROTUS ALTIFRONS,'.

altifrons (Oxygonia) Walker, 1851a : 553. LECTOTYPE ♀ with labels: 'Type' and 'Brazil' and 'Ent. Club.; 44. 12.' and '19. OXYGONIA ALTIFRONS.'.

The right tegmen and the tip of the anterior pronotal horn are lost.

anatina (Hypsoprora) Fowler, 1894c : 26. LECTOTYPE ♀ with labels: 'Type' and 'Bugaba,; Panama.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hypsoprora; anatina Fowler; TYPE.' and the B.C.A. label.

The lectotype is one of two females glued to the same card and is indicated by an adjacent red ink spot. There is also a male from the type-series in the collection.

angulata (Pyrgauchenia) Funkhouser, 1932a : 114. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1933–360' and 'B. N. BORNEO.; Mt. Kinabalu,; Kiau, 3,000 ft.; 7. 4. 1929.; H. M. Pendlebury; coll.; F.M.S. Museums.' and 'HOLOTYPE; Pyrgauchenia angulata; W. D. Funkhouser'.

The anterior and posterior pronotal processes are missing. There are eight paratypes in the collection.

angulata (Thelia) Walker, 1851a : 558. Holotype ♂ with labels: 'Type' and '41.; 5.17; 291' and 'E. Doubleday.; Warm Springs,; N. Carolina.' and '10. THELIA ANGULATA'.

The specimen was erroneously described as female.

anodonta (Hypsauchenia) Buckton, 1903a : 212. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Perak; Doherty.' and 'Hypsauchenia; anodonta; type 140.'.

There are four other males and two females from the type-series in the collection; only one is undamaged.

ansatus (Ibiceps) Buckton, 1903a : 239. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Mt. Alexandre; to Mt. Nisbet; Brit. N. G., 1.96; Anthony.' and 'Ibicips [sic]; ansatus; Buckt; type'.

The head is missing.

antonina (Enchenopa) Walker, 1851a : 488. Holotype ♂ with labels: 'Type' and 'N.; America' and 'N. Amer' and 'Ent. Club.; 44–12.' and '32. ENCHENOPA ANTONINA,'.

aperta (Enchenopa) Walker, 1858c : 337. Holotype ♀ with labels: 'Type' and 'Tejuca; Jany. 1857; H. Clark; 57.50.' and 'ENCHENOPA APERTA.'.

The dorsal pronotal horn is missing.

apicalis (Ceresa) Walker, 1851a : 533. Holotype ♀ with labels: 'Type' and 'N. Amer' and 'Ent. Club.; 44–12.' and '33. CERESA APICALIS' and 'Amastris; or Vanduzea Gdg' and 'Vanduzea; arcuata Say.; fide F. W. G.'.

The right tegmen is missing.

apicalis (Hemiptycha) Walker, 1851a : 572. Holotype ♀ with labels: 'Type' and '191' and '20. HEMIPTYCHA APICALIS,'.

The right tegmen is missing.

apicalis (Umbonia) Walker, 1851a : 518. Holotype ♀ with labels: 'Type' and 'Colum-; bia; 47; 25' and '4. UMBONIA APICALIS,'.

apriformis (Hemiptycha) Walker, 1858b : 144. LECTOTYPE ♂ with labels: 'Type' and 'mex; 56; 143' and 'HEMIPTYCHA APRIFORMIS.'.

arcuata (Enchenopa) Walker, 1858b : 125. Holotype with labels: 'Type' and 'PETROPOLIS; Feby. 1857.; H. Clark.; 57. 43' and 'ENCHENOPA ARCUATA.'.

The head, abdomen, and posterior pronotal process are missing and the tegmina are damaged.

articularia (Umbonia) Buckton, 1901a : 89. LECTOTYPE ♀ with labels: 'Type' and 'Belize; Brit. Honduras' and 'Umbonia; articularia; 235ns'.

There are two other females from the type-series in the collection.

ascendens (Enchenopa) Walker, 1851a : 493. Holotype ♀ with labels: 'Type' and 'Colum-; bia; 47; 25' and '40. ENCHENOPA ASCENDENS,'.

The anterior and posterior pronotal horns and the tips of the tegmina are damaged.

asmodeus (Centrotypus) Distant, 1908g : 36. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Centrotypus; asmodeus; type Dist.' and 'Centrotus; asmodeus.; M.S.'.

There are two other males from the type-series in the collection.

aspera (Hypsoprora) Haviland, 1925a : 242. Holotype ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; August, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Hypsoprora; aspera,; Haviland'.

In the description it is dated 'July 23rd'; I believe the label to be in error.

aspera (Tragopa) Walker, 1858b : 151. Holotype ♀ with labels: 'Type' and 'Villa; Nova; 55; 44' and 'TRAGOPA ASPERA.'.

asperulus (Centrotus) Walker, 1858b : 162. Holotype ♂ with labels: 'Type' and 'Sierra; Leone.; Morgan; 49; 31' and 'CENTROTUS ASPERULUS.'.

The legs, right wing and tegmen are lost, the posterior pronotal process is broken, and the abdomen is glued on upside-down.

***aspidistrae* (*Bolbonota*)** Haviland, 1925a : 241. LECTOTYPE ♀ with labels: 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; September. 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense.' and 'Bolbonota; aspidistrae; Haviland'.

Of the twelve specimens from the type-series in the collection, the one bearing the 'Type' label is badly damaged and is not, therefore, selected as the lectotype.

***assamensis* (*Tricentrus*)** Distant, 1908g : 57. LECTOTYPE ♀ with labels: 'Type' and 'Margherita' and 'assamensis; type Dist.'.

There is another female from the type-series in the collection.

***assimilis* (*Stictopelta*)** Fowler, 1895a : 57. LECTOTYPE ♂ with labels: 'Type' and 'Duenas,; Guatemala,; G. C. Champion.' and 'affinis' and 'Brit. Mus.; 1904–55.' and 'Stictopelta; assimilis Fowler; TYPE.' and the B.C.A. label.

There is another male from the type-series in the collection.

***aterrima* (*Gargara*)** Distant, 1915c : 491. LECTOTYPE ♀ with labels: 'Type' and '1912–193' and 'Uganda Prot.; Budongo Forest,; Unyoro, 3,400 ft.; 11–15 Dec. 1911.; S. A. Neave.' and 'Gargara; aterrima; type Dist.'.

There are two other females from the type-series in the collection.

***atomarius* (*Tetraplatys*)** Walker, 1851a : 510. LECTOTYPE ♀ with labels: 'Type' and 'Brazil; 43; 86' and '1. TETRAPLATYS ATOMARIUS,.'

The five specimens from the type-series in the collection are all female, though they were described by Walker as males. The confusion probably arose from the extremely small size of the ovipositor sheath in this genus.

***atratus* (*Centrotus*)** Walker, 1851a : 624. Holotype ♂ with labels: 'Type' and '38.11.8; 563.' and 'Sierra Leone; Rev. D. F. MORGAN' and '60. CENTROTUS ATRATUS,'.

The posterior pronotal process is missing.

***atricapilla* (*Parayasa*)** Distant, 1916a : 179. Holotype ♀ with labels: 'Type' and 'Nilgiri Hills,; S. India.; T. V. Campbell.' and 'S. India.; E. A. Butler.; 1915–60.' and 'Parayasa; atricapilla; type Dist.'.

***atricoxis* (*Centrotus*)** Kirby, 1891a : 164. Holotype ♀ with labels: 'Type' and '44' and 'Centrotus; atricoxis; Kb. type; Ceylon.; Green Coll.; 90–115.'.

***atromaculatus* (*Sextius*)** Distant, 1916d : 35. Holotype ♀ with labels: 'Type' and 'Queensland.; F. P. Dodd.; 1907–54.' and 'Sextius; atromaculatus; type Dist.'.

***attenuata* (*Hemiptycha*)** Walker, 1858b : 144. Holotype ♂ with labels: 'Type' and 'Brazil; 53; 2' and 'HEMIPTYCHA ATTENUATA.'.

***attenuata* (*Xiphistes*)** Distant, 1915b : 324. Holotype ♀ with labels: 'Type' and 'Lesapi R.; Mashona l'd 3–10–97.; G. A. K. Marshall; 1908–212.' and 'Xiphistes; attenuata; type Dist.'.

***aureomaculatus* (*Leptocentrus*)** Distant, 1916c : 315. LECTOTYPE ♀ with labels: 'Type' and 'Uganda Prot.; Valley of Kafu R.; Unyoro. 3,400 ft.; 23–28 Dec. 1911.; S. A. Neave.' and 'Leptocentrus; aureomaculatus; type Dist.'.

There are four other females and a male from the type-series in the collection.

***aurifascia* (*Centrotus*)** Walker, 1851a : 618. LECTOTYPE ♂ with labels: 'Type' and 'Jamaica; 46; 84.' and '49. CENTROTUS AURIFASCIA,'.

There is another male and a female from the type-series in the collection.

***auriflua* (*Oxygonia*)** Walker, 1851a : 550. LECTOTYPE ♀ with labels: 'Vene-; zuela.; 47; 52'.

Of the two specimens from the type-series in the collection, the one bearing the 'Type' label is very badly damaged and is therefore not chosen as the lectotype.

***auritus* (*Otaris*)** Buckton, 1903a : 249. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Sumatra.' and 'e.' and 'Otaris; auritus; type Buckt.' and 'Oticephalus; obtusus.'.

australasiae (Xiphistes) Distant, 1916d : 21. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'b.c.' and 'Sud-Austral.' and 'Xiphistes; australasiae; type Dist.',

Capener (1962) believes the above locality to be incorrect and that the specimen was probably captured at the Cape of Good Hope, South Africa.

australis (Leptocentrus) Distant, 1916d : 24. LECTOTYPE with labels: 'Type' and 'Malvern,; Natal. Oct. '97.; G. A. K. Marshall.; 1908–212.' and 'Leptocentrus; australis; type Dist.'.

The abdomen is missing. There are three other specimens from the type-series in the collection: one is female, and the others are without abdomens.

australis (Otinotoides) Distant, 1916d : 40. Holotype ♂ with labels: 'Type' and 'Queensland.; F. P. Dodd.; 1907–54.' and 'Kuranda; Qld.; Sepr. 04; F. P. Dodd.' and 'Otinotoides; australis; type Dist.'.

bajulans (Leptocentrus) Distant, 1916a : 155. LECTOTYPE ♂ with labels: 'Type' and 'CALCUTTA; 21–2–07' and 'Distant Coll.; 1911–383.' and 'Leptocentrus; bajulans; type Dist.'.

There is another male from the type-series in the collection.

balteata (Telingana) Distant, 1916a : 151. LECTOTYPE ♀ with labels: 'Type' and 'K.K.; 4.14; 364' and 'Kodai Kanal; S. India. Campbell.' and 'S. India; E. A. Butler.; 1915–60.' and 'Telingana; balteata; type Dist.'.

There are three other females and three males from the type-series in the collection.

basalis (Centrotus) Walker, 1851a : 626. LECTOTYPE ♀ with labels: 'Type' and 'Hong; Kong; 48; 60' and '65. CENTROTUS BASALIS.'.

The suprahumeral horns and the posterior pronotal process are broken. There is another female from the type-series in the collection; its head is missing.

basalis (Ceresa) Walker, 1851a : 527. LECTOTYPE ♂ with labels: 'Type' and '815' and 'R' and '12. CERESA BASALIS,'.

There are two other males from the type-series in the collection.

beebei (Leioscyta) Haviland, 1925a : 239. Holotype ♀ with labels: 'Type' and 'Kartabo, Brit. Guiana; September. 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Leioscyta; beebei.; Haviland.'.

bellicosa (Stegaspis) Walker, 1858b : 165. LECTOTYPE ♀ with labels: 'Type' and 'Rio Janeiro; Decr. 1856.; H. Clark; 57.57.' and 'STEGASPIS BELLICOSA.'.

There is another female from the type-series in the collection; its pronotum is badly damaged.

belliger (Heniconotus) Butler, 1878a : 359. Holotype ♀ with labels: 'Type' and 'St; Paulo; 65; 3' and 'H. belliger; Butler Type'.

The posterior pronotal process and the left suprahumeral horn are broken.

bicolor (Centrotus) Walker, 1851a : 625. Holotype ♀ with labels: 'Type' and '63. CENTROTUS BICOLOR,'.

The posterior pronotal process is missing and the tegmina are damaged.

bicolor (Enchenopa) Walker, 1851a : 492. Holotype ♂ with labels: 'Type' and 'Brasil; 43; 86' and '38. ENCHENOPA BICOLOR,'.

The head is damaged.

bicolor (Erechtia) Walker, 1858b : 141. Holotype ♀ with labels: 'Type' and 'Santar; em; 54; 63' and 'ERECHTIA BICOLOR.'.

bicolor (Gargara) Funkhouser, 1927b : 9. Holotype ♀ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Gunung Singgalang; (Sumatra's Westkust); 1800M. vii 1925; leg. E. Jacobson.' and 'HOLOTYPE ♀; Gargara bicolor; W. D. Funkhouser'.

The allotype is also in the collection.

bicolor (Maurya) Funkhouser, 1936c : 246. Holotype ♀ with labels: 'Type' and '262' and 'Brit. Mus.; 1936–222' and 'Debrepani, 6000'; Darjeeling, Bengal; J. C. M. Gardner.; 18.ix.1929' and 'HOLOTYPE; Maurya bicolor; W. D. Funkhouser'.

There are two discoidal cells in the tegmen, not three as described. The allotype is also in the collection.

bicolor (Philya) Walker, 1858b : 126. LECTOTYPE ♂ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; H. Clark.' and 'PHILYA BICOLOR.'.

Walker erroneously refers to only one specimen ('a') in his description; there are another male and two females from the type-series in the collection, the existence of which is indicated in the description.

bicolor (Tricentrus) Distant, 1908g : 55. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Bombay.; Dixon.' and 'bicolor; Dist.; type'.

There are two other females from the type-series in the collection.

bicuspis (Enchenopa) Walker, 1851a : 487. Holotype ♀ with labels: 'Type' and '31. ENCHENOPA BICUSPIS,'.

The pronotum is damaged.

bifacies (Tragopa) Walker, 1858b : 150. Holotype ♀ with labels: 'Type' and 'Villa; Nova; 55; 44' and 'TRAGOPA BIFACIES.'.

The 'horns' referred to in the description are the greatly developed humeral angles.

bifasciata (Rhexia) Butler, 1878a : 356. Holotype ♂ with labels: 'Type' and 'Amazon; St Paul; 60; 32' and 'R. bifasciata; Butler Type.'.

The greater part of the abdomen has been eaten away.

bifurcus (Tricentrus) Distant, 1916a : 165. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Darjiling' and 'Tricentrus; bifurcus; type Dist.'.

There is another specimen from the type-series in the collection, its abdomen is missing.

bifusifera (Enchenopa) Walker, 1858b : 125. Holotype ♀ with labels: 'Type' and 'Vera; Cruz; 54; 66' and 'ENCHENOPA BIFUSIFERA.'.

The anterior pronotal process is broken.

bigutta (Hemiptycha) Walker, 1858b : 142. Holotype ♀ with labels: 'Type' and 'Guatema.; 55.71.' and 'HEMIPTYCHA BIGUTTA'.

bilinea (Tragopa) Walker, 1858b : 152. Holotype ♀ with labels: 'Type' and 'Santar; em; 53; 72' and 'TRAGOPA BILINEA.'.

bimacula (Enchenopa) Walker, 1851a : 491. Holotype ♂ with labels: 'Type' and '41.; 5.17.; 285.' and 'E. Doubleday.; Trenton Falls,; New York.' and '37. ENCHENOPA BIMACULA,'.

binaria var. ***mutabilis (Micrutalis)*** Fowler, 1895e : 117. LECTOTYPE ♀ with labels: 'Type' and 'Orizaba.' and 'Mexico.; Salle Coll.' and 'Brit. Mus.; 1904–55.' and 'Micrutalis; binaria var. mutabilis; Fowler. TYPE.' and the B.C.A. label.

The left wing and both tegmina are missing. There are two other females, one male, and a specimen without an abdomen from the type-series in the collection.

binotatus (Centrotus) Walker, 1858a : 81. LECTOTYPE with labels: 'Type' and '68.4' and 'N.S.W.' and 'binotatus Walk'.

The abdomen is missing.

binsarus (Oxyrhachis) Distant, 1916a : 148. Holotype ♀ with labels: 'Type' and '21' and 'United Prov.,; Forest Dept.,; Dehra Dun.; Dr. A. W. Imms.; 1915–228.' and 'Binsar; (Kumaon); 7.700 ft.' and 'Oxyrhachis; binsarus; type Dist.'.

bioculatus (Centrotus) Kirby, 1891a : 166. LECTOTYPE ♂ with labels: 'Type' and '39' and 'Pundaloya; Ceylon. I' and 'Centrotus; bioculatus; Kb. type; Ceylon.; Green Coll.: 90–115.'.

There is another male from the type-series in the collection.

bipennis (Centrotus) Walker, 1851a : 606. Holotype with labels: 'Type' and '46; 88' and '19. CENTROTUS BIPENNIS.'.

The abdomen is missing and the anterior pronotal horn is damaged.

biplaga (Centrotus) Walker, 1870a : 191. LECTOTYPE ♂ with labels: 'Type' and 'Mak.' and '68.4' and 'Celeb; Wallace' and 'biplaga'.

The head and abdomen have become detached and are glued separately.

biplaga (Enchenopa) Walker, 1858a : 60. LECTOTYPE ♀ with labels: 'Type' and 'Columb' and 'Colombia' and 'biplaga Walk'.

biplaga (Horiola) Walker, 1862a : 318. Holotype with labels: 'Type' and 'Rio' and 'Miss Pascoe,; 96–41.' and 'Horiola; biplaga; type Walk' and 'Horiola; biplaga Wr.'.

The head only, the rest of the specimen is lost.

bipuncta (Thelia) Walker, 1851a : 556. LECTOTYPE ♀ with labels: 'Type' and 'Para; 50; 2.' and '6. THELIA BIPUNCTA,'.

There is another female from the type-series in the collection.

bipunctata (Membracis) Fabricius, 1775a : 677. LECTOTYPE ♂ with labels: 'Australia.' and '63; 47.' and associated with it, though not mounted on the same pin, 'Type' and 'Membr. 2punctata; Fab. Entom. p. 677. 11.'.

The head is missing. There is another badly damaged specimen from the type-series Both specimens are from the Joseph Banks Collection and the 'Type' label is handwritten.

bisenti (Oxyrhachis) Distant, 1915b : 322. LECTOTYPE with labels: 'Type' and '1913–140.' and 'Nyasaland.; Mlanje.; Aug. 15. 1913.; S. A. Neave.' and 'Oxyrhachis; bisenti; type Dist.'.

The abdomen is missing and the posterior pronotal process is glued to a card beneath the specimen. There are two males and five females from the type-series in the collection also.

biseratensis (Polonius) Distant, 1916e : 291. Holotype ♀ with labels: 'Type' and 'Annandale & Robinson.; Siamese Malay States.; 1903–127.' and 'Biserat.; Siam:; Malay States; No 188' and 'Polonius; biseratensis; type Dist.'.

bistriga (Darnis) Walker, 1858a : 74. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Amaz' and 'bistriga Walk.'.

bituberculata (Pterygia) Fowler, 1894b : 24. LECTOTYPE ♀ with labels: 'Type' and 'David,; Chiriqui.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Pterygia; bituberculata; Fowler, TYPE.' and the B.C.A. label.

One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot. There are twenty-four other specimens from the type-series in the collection.

biturris (Centrotus) Walker, 1858b : 164. LECTOTYPE ♀ with labels: 'Type' and '56.; 85' and 'CENTROTUS BITURRIS.'.

There are three other females and a male from the type-series in the collection. The lectotype has the right tegmen missing.

borneensis (Centrochares) Distant, 1916c : 314. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Kuching; May 16; 1900' and 'Centrochares; borneensis; type Dist.'.

bovillus (Tricentrus) Distant, 1916a : 164. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Moulmein; L. Burma; 6–iii–08' and 'Tricentrus; bovillus; type Dist.'.

bovinus (Centrotus) Distant, 1916c : 323. LECTOTYPE ♂ with labels: 'Type' and '1914–348.' and 'Uganda.; Kadunguru.; Eastern Province.; 1–10 Jan. 1914.; C. C. Gowdey.' and 'Centrotus; bovinus; type Dist.'.

There are also four females from the type-series in the collection.

bowringi (Centrotypus) Distant, 1916e : 291. Holotype ♀ with labels: 'Type' and 'Pulo; Penang; 61; 46.' and 'Centrotypus; bowringi; type Dist.'.

brevicornis (Campylocentrus) Fowler, 1896d : 151. LECTOTYPE ♂ with labels: 'Type' and 'V. de Chiriqui.; 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Campylocentrus; brevicornis. Fowler; TYPE.' and the B.C.A. label.

There is another male from the type-series in the collection.

brevicornis (Centruchus) Funkhouser, 1936c : 247. Holotype ♀ with labels: 'Type' and '239' and 'Brit. Mus.; 1936–222' and 'Putshai 6000; Lolab Valley,; Kashmir. 23.v.1928.; C. F. C. Beeson.; 160' and 'Centruchus; brevicornis; HOLOTYPE; W. D. Funkhouser'.

The allotype is also in the collection.

brevicornis (Otinotoides) Funkhouser, 1935d : 432. Holotype ♂ with labels: 'Type; H.T.' and 'British Solomons; Jan. 1932; R. J. A. W. Lever; Lur.; Guardalcanal.' and 'Pres. by;

Imp. Inst. Ent.; B.M. 1935–224.' and 'HOLOTYPE; Otinotoides brevicornis; W. D. Funkhouser'.

The tegmina have three discoidal cells, not four as stated in description.

brevicornis (Otinotus) Distant, 1916a : 160 LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll ; 1911–383.' and 'Lahore; Punjab.; 9–v–08; N.A.' and 'Otinotus; brevicornis; type Dist.'.

There is another male from the type-series in the collection.

brevicornis (Potnia) Fowler, 1894c : 46. LECTOTYPE ♀ with labels: 'Type' and 'Boquete,; 3500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Potnia; brevicornis.; Fowler. TYPE' and the B.C.A. label.

Glued to the same card as the fragments of another specimen, the lectotype is indicated by an adjacent red ink spot. There are eleven other specimens from the type-series in the collection.

brevinota (Pyrgauchenia) Funkhouser, 1932a : 115. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1933–360.' and 'B. N. BORNEO.; Mt. Kinabalu,; Kiau, 3,000 ft.; 7.4.1929.; H. M. Pendlebury; coll.; F. M. S. Museums.' and 'HOLOTYPE; Pyrgauchenia brevinota; W. D. Funkhouser.'.

The anterior pronotal horn is broken. There are three other females and two males from the type-series in the collection.

brevis (Anchon) Distant, 1908g : 52. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Anaradhapura; Ceylon. 2. 1904' and 'Anchon; brevis Dist.; type'.

brevis (Ceresa) Walker, 1851a : 528. Holotype ♀ with labels: 'Type' and 'NY' and '1891' and '13. CERESA BREVIS,'.

brevis (Enchenopa) Walker, 1851a : 492. Holotype ♂ with labels: 'Type' and '41.; 5: 17.; 287.' and 'United; States' and 'binotatus SY' and '39. ENCHENOPA BREVIS,'.

The tips of the anterior and posterior pronotal horns are broken.

brevis (Hemiptycha) Walker, 1851a : 571. Holotype ♂ with labels: 'Type' and 'Ent. Club.; 44–12.' and '19. HEMIPTYCHA BREVIS,'.

brevis (Oxyrhachis) Capener, 1962 : 147. Holotype ♀ with labels: 'HOLOTYPE' and 'Oxyrhachis; brevis; CAPENER; 1962.' and 'DRAWING; No. 240; A. L. CAPENER.' and 'S. Africa.; R. E. Turner.; Brit. Mus.; 1930–480.' and 'Cape Province:; Somerset East.; Sept. 1930.'.

The allotype and six female paratypes are also in the collection.

brevivitta (Centrotus) Walker, 1870a : 185. LECTOTYPE ♀ with labels: 'Type' and 'N.' and '68.4' and 'N. Gui; Wallace' and 'brevivitta'.

The right tegmen is lost.

brevivitta (Polyglypta) Walker, 1851a : 545. Holotype ♂ with labels: 'Type' and 'Vene-; zuela; 47; 52' and '13. POLYGLYPTA BREVIVITTA,'.

brunnea (Hypamastris) Fowler, 1895d : 94. LECTOTYPE ♀ with labels: 'Type; H.T.' and '58.135 Mex.; (Oajaca.)' and 'Brit. Mus.; 1904–55.' and 'Hypamastris; brunnea. Fowler.; TYPE.'.

There is another female from the type-series in the collection.

brunnea (Maguva) Funkhouser, 1937b : 100. Holotype ♀ with labels: 'Type' and 'Figg' and 'Beaten from; trees.' and 'SARAWAK:; Mt. Dulit.; 4000 ft.; Moss forest.; 25.x.1932.' and 'Oxford Univ. Exp.; B. M. Hobby &; A. W. Moore.; B.M. 1933–254.' and 'HOLOTYPE; Maguva brunnea; W. D. Funkhouser'.

The tegmina have two discoidal cells, not three as stated in the description. There is also a female paratype in the collection.

brunnea (Pyrgauchenia) Funkhouser, 1932a : 113. Holotype ♂ with labels: 'Type' and 'Brit. Mus.; 1933–360.' and 'B. N. BORNEO.; Mt. Kinabalu,; Kiau, 3,000 ft.; 7.4.1929.; H. M. Pendlebury; coll.; F. M. S. Museums.' and 'HOLOTYPE; Pyrgauchenia brunnea; W. D. Funkhouser'.

The anterior pronotal horn is missing. There are three male paratypes in the collection.

brunneus (Campylocentrus) Fowler, 1896d : 151. Holotype ♀ with labels: 'Type' and 'Omilteme; Guerrero; 8000 ft.; July. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Campylocentrus; brunneus. Fowler; TYPE.' and the B.C.A. label.

brunneus (Leptocentrus) Funkhouser, 1935d : 428. Holotype ♂ with labels: 'Type; H.T.' and 'NAIROBI; Jan. 1921.; V. van Someren.' and 'Pres. by; Imp. Inst. Ent.; B.M. 1935–297.' and 'HOLOTYPE; leptocentrus brunneus; W. D. Funkhouser'.

bruneipennis (Telamona) Buckton, 1903a : 197. LECTOTYPE ♀ with labels: 'Type' and 'B.; 199' and 'New; York; C.; 8.18' and 'Telemona [sic]; brunnipennis [sic]'.

The right wing and tegmen are lost.

bubalus (Centrotus) Kirby, 1891a : 167. Holotype ♀ with labels: 'Type' and '80' and 'Pundaloya.' and 'Centrotus; bubalus; Kb type; Ceylon.; Green Coll.; 90–115.'.

bucephalus (Sextius) Distant, 1916d : 34. Holotype ♀ with labels: 'Type' and 'Sydney, N.S.W.; 1900–1903.; J. J. Walker.; 1910–384.' and 'Sextius; bucephalus; type Dist.'.

bugabensis (Tragopa) Fowler, 1895c : 85. LECTOTYPE ♂ with labels: 'Type' and 'Bugaba,; 800–1,500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Tragopa; bugabensis.; Fowler. TYPE' and the B.C.A. label.

Glued to the same card as a female, the lectotype is indicated by an adjacent red ink spot. There are two other males and a female from the type-series in the collection.

bulbaceus (Tiberianus) Distant, 1915c : 494. Holotype ♂ with labels: 'Type' and 'Stellenbosch, C.C.; Nov. 1904.; G. A. K. Marshall.; 1908–212.' and 'Distant Coll.; 1911–383.' and 'Tiberianus; bulbaceus; type Dist.'.

bulbicornis (Pyrgonotta) Funkhouser, 1927h : 253. Holotype ♀ with labels: '155' and 'Brit. Mus.; 1930–324.' and 'MALAY PENIN:; Selangor,; Bukit Kutu; 3500 ft.; April 19th 1926.; H. M. Pendlebury,; EX COLL:; F.M.S.; MUSEUMS.' and 'HOLOTYPE; Pyrgonotta bulbicornis; W. D. Funkhouser'.

bulbifer (Emphusis) Funkhouser, 1927d : 106. Holotype ♀ with labels: 'Brit. Mus.; 1928–174.' and 'Lubuksikaping; (Sumatra's Westkust); 450M. 1926; leg. E. Jacobson.' and 'Emphusis sp.; det. W. E. China 1926.' and 'HOLOTYPE; Emphusis bulbifer; W. D. Funkhouser'.

bulbosa (Hypsauchenia) Buckton, 1903a : 211. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Perak; Doherty' and 'Hypsauchenia; bulbosa; type 141.'.

There are three other females from the type-series in the collection.

bulbosa (Tropidocyta) Haviland, 1925a : 236. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; July, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Tropidocyta; bulbosa; Haviland.'.

The lectotype is one of two females pinned together and is indicated by a small square of red paper beneath. There are another female and four males from the type-series in the collection.

caelata (Gargara) Distant, 1916a : 172. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'NILGIRI; (HAMPSON)' and 'Gargara; caelata; type Dist.'.

caliginosa (Aconophora) Walker, 1858b : 135. Holotype ♀ with labels: 'Type' and 'Guatim; ala; 52; 119' and 'ACONOPHORA CALIGINOSA.'.

caliginosus (Centrotus) Walker, 1857a : 93. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Wallace' and 'MAL-; CA' and 'caliginosus Walk'.

campbelli (Otinotus) Distant, 1916a : 158. Holotype ♀ with labels: 'Type' and 'O.; 5.15.; 406' and '406' and 'Nilgiri Hills; S. India; T. V. Campbell' and 'S. India.; E. A. Butler.; 1915–60.' and 'Otinotus; campbelli; type Dist.'.

campbelli (Telingana) Distant, 1916a : 150. LECTOTYPE ♀ with labels: 'Type' and 'K. K.; 5.14,; 197' and 'S. India.; E. A. Butler.; 1915–60.' and 'Kodai Kanal.; S. India.; T. V. Campbell.' and '197' and 'Telingana; campbelli; type Dist.'.

There are two other females from the type-series in the collection.

***canescens* (*Leptocentrus*)** Buckton, 1903a : 234. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Belize; Honduras' and 'Centrotus; odu… eo…pennis; bi' [this label is illegible] and 'Leptocentrus, canescens; type Buckt.'.

The head is missing. The locality label is probably erroneous.

***capistrata* (*Telingana*)** Distant, 1908g : 19. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Ruby Mines; Burma' and 'Telingana; capistrata; type Dist.'.

There are two other females from the type-series in the collection.

***capreolus* (*Centrotus*)** Walker, 1851a : 627. LECTOTYPE ♀ with labels: 'Type' and 'Phil.; Isl.; 45; 49' and '66. CENTROTUS CAPREOLUS,'.

***capricornis* (*Poppea*)** Fowler, 1895d : 99. LECTOTYPE ♀ with labels: 'Type; H.T.' and 'Bugaba,; Panama.; Champion.' and 'Poppaea [sic]; capricornis. Fowler; TYPE.' and the B.C.A. label.

There is one other female and two males from the type-series in the collection.

***carbonaria* (*Aspasiana*)** Distant, 1916d : 26. Holotype ♀ with labels: 'Type' and 'N' and 'N Gui.; Wallace' and 'carbonaria' and 'Aspasiana; carbonaria; type Dist.' and 'carbonaria; m.s.: Walk'.

***carinata* (*Darnoides*)** Walker, 1851a : 590. Holotype ♀ with labels: 'Type' and 'Brazil; 43; 86' and '3. DARNOIDES CARINATA,'.

The right tegmen is lost.

***carteri* (*Takliwa*)** Funkhouser, 1935d : 430. Holotype ♀ with labels: 'Type; H.T.' and 'Pres. by; Imp. Inst. Ent.; B.M. 1935–297.' and 'Gold Coast; 1921–22.; G. S. Cotterell.' and 'HOLOTYPE; Takliwa carteri; W. D. Funkhouser,'.

***caseoscalpris* (*Alcmeone*)** Butler, 1878a : 344. Holotype ♀ with labels: 'Type' and 'Ent. Club.; 44–12.' and 'A. caseoscalpris; Butler Type.'.

The specimen is badly damaged.

***cassis* (*Hypsoprora*)** Buckton, 1901a : 60. Holotype with labels: 'Type' and 'Hypsoprora; cassis; type Buckt.' and 'Kranos; insignis; australia.'.

The abdomen is lost and the posterior pronotal process is broken.

***castaneus* (*Sertorius*)** Distant, 1916d : 25. Holotype ♀ with labels: 'Type' and 'Australia.' and 'Distant Coll.; 1911–383.' and 'Sertorius; castaneus; type Dist.'.

***cavendus* (*Convector*)** Distant, 1916a : 153. Holotype ♀ with labels: 'Type' and 'B25' and 'Nilgiri Hills,; S. India.; T. V. Campbell.' and 'S. India.; E. A. Butler.; 1915–60.' and 'Convector; cavendus; type Dist.'.

***cavipennis* (*Gnamptocentrus*)** Fowler, 1896d : 153. LECTOTYPE ♀ with labels: 'Type' and 'Brit. Mus.; 1904–55.' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Gnamptocentrus; cavipennis; Fowler. TYPE.' and the B.C.A. label.

One of two females glued to the same card, and lectotype is indicated by an adjacent red ink spot. There are two other females from the type-series in the collection.

***celsa* (*Membracis*)** Walker, 1851a : 475. Holotype ♀ with labels: 'Type' and 'Brasil.' and '1938' and '9. MEMBRACIS CELSA.'.

***centrotoides* (*Thelia*)** Walker, 1858b : 138. Holotype ♀ with labels: 'Type' and 'S. Amer; napo; 51; 70' and 'THELIA CENTROTOIDES.'.

***cerulea* (*Tynelia*)** Funkhouser, 1935d : 434. Holotype ♂ with labels: 'Type; H.T.' and 'BRITISH GUIANA; Cattle Trail Survey; Canister Falls; June 1920.; A. A. Abraham. Coll.' and 'Pres. by; Imp. Inst. Ent.; B.M. 1935–297.' and 'Tynelia; cerulea; HOLOTYPE; W. D. Funkhouser'.

***cerviceps* (*Pterygia*)** Fowler, 1894b : 24. LECTOTYPE ♂ with labels: 'Type' and 'Teleman,; Vera Paz.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Sp. figured.' and 'Pterygia; cerviceps; Fowler. TYPE' and the B.C.A. label.

There is also a female from the type-series in the collection.

championi (Sphongophorus) Fowler, 1894c : 28. LECTOTYPE ♂ with labels: 'Type' and 'San Isidro,; 1600 ft.; Champion ' and 'Brit. Mus.; 1904–55.' and 'Sponghophorus [sic]; Championi Fowler; TYPE' and the B.C.A. label.

There is another male from the type-series in the collection.

championi (Stylocentrus) Fowler, 1896e : 164. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Stylocentrus; championi. Fowler; TYPE.'.

There are two other females from the type-series in the collection.

chloroticus (Centrotus) Walker, 1858a : 82. LECTOTYPE ♀ with labels: 'Type' and 'Spain.' and 'Centrotus; chloritus; nr Sopi Espagne' and 'chloroticus Walk.'.

The posterior pronotal horn is broken.

cicadiformis (Centrotus) Walker, 1857b : 164. LECTOTYPE ♀ with labels: 'Type' and 'SAR.' and 'Wallace' and '68.4' and 'cicadiformis Walk'.

The suprahumeral horns and the posterior pronotal process are missing.

cinctata (Boethoos) Haviland, 1925a : 249. Holotype ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; September, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Boëthoös; cinctata; Haviland'.

cinerea var. ***obfuscata (Hoplophora)*** Fowler, 1894c ; 40. LECTOTYPE ♂ with labels: 'Type' and 'Capetillo,; Guatemala,; G. C. Champion.' and 'Brit. Mus.; 1904–55.' and 'H. cinerea; v. obfuscata; TYPE' and the B.C.A. label.

There is another male from the type-series in the collection.

citrea (Gargara) Distant, 1908g : 63. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Gargara; citrea; type Dist.'.

cognata (Telingana) Distant, 1916a : 149. LECTOTYPE ♀ with labels: 'Type' and '4.; 4.15.' and '396' and 'S. India.; E. A. Butler.; 1915–60.' and 'Nilgiri Hills; S. India; T. V. Campbell.' and 'Telingana; cognata; type Dist.'.

There is another female from the type-series in the collection.

collina (Thelia) Walker, 1851a : 565. LECTOTYPE ♀ with labels: 'Type' and 'N Y' and '1874' and '35. THELIA COLLINA,'.

colorata (Pyrgauchenia) Distant, 1915b : 326. LECTOTYPE ♀ with labels: 'Type' and '63' and 'Sarawak; Museum.; 1914–253.' and 'Mt. Kinabalu.; 3.000 ft.; Sep. 1913.' and 'Pyrgauchenia; colorata; type Dist.'.

There are two other females from the type-series in the collection. All three specimens have the anterior pronotal horn missing.

compacta (Thelia) Walker, 1858b : 140. Holotype ♀ with labels: 'Type' and 'Santar; em; 54; 63' and 'THELIA COMPACTA.'.

composita (Horiola) Walker, 1851a : 587. Holotype ♀ with labels: 'Type' and 'Vene-; zuela; 47; 1' and '9. HORIOLA COMPOSITA,'.

The right tegmen and the posteror pronotal process are lost.

compressa (Aconophora) Walker, 1851a : 541. Holotype ♂ with labels: 'Type' and 'Mexico; 43; 13' and '18. ACONOPHORA COMPRESSA,'.

compressa (Antianthe) Buckton, 1903a : 191. LECTOTYPE ♀ with labels: 'Type' and '5' and 'New; York; C.; 8.13' and 'Antianthe; compressa'.

The left tegmen is lost and the right tegmen and pronotum are damaged.

concinna (Adippe) Fowler, 1896b : 135. LECTOTYPE ♂ with labels: 'Type' and 'Bugaba,; Panama.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Adippe; concinna Fowler; TYPE.' and the B.C.A. label.

There are also two females from the type-series in the collection.

concinna (Ceresa) Fowler, 1895d : 106. Holotype ♀ with labels: 'Type' and 'Vera Cruz.; H.H.S.; Jan. 1888.' and 'Brit. Mus.; 1904–55.' and 'Ceresa; concinna; Fowler. TYPE' and the B.C.A. label.

The tegmina, wings and abdomen are broken.

concinna (Hoplophora) Fowler, 1894c : 41. Holotype ♂ with labels: 'Type' and '♂' and 'V. de Chiriqui,; 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hoplophora; concinna Fowler.; TYPE' and the B.C.A. label.

concinna (Poppea) Fowler, 1895d : 100. LECTOTYPE ♀ with labels: 'Type; H.T.' and 'V. de Chiriqui,; 2–3000 ft.; Champion.' and 'Poppaea [sic]; concinna. Fowler; TYPE' and the B.C.A. label.

There is another female from the type-series in the collection.

concisa (Entylia) Walker, 1851a : 547. LECTOTYPE ♀ with labels: 'Type' and 'E.; Florida' and '41.; 5.17.; 310.' and 'E. Doubleday.; St. John's Bluff,; E. Florida.' and '6. ENTYLIA CONCISA,'.

There are two other females from the type-series in the collection.

concolor (Aconophora) Walker, 1851a : 540. Holotype ♂ with labels: 'Type' and 'Mexico; 43. 13' and '17. ACONOPHORA CONCOLOR.'.

The head is missing.

concolor (Hoplophora) Walker, 1851a : 514. Holotype ♀ with labels: 'Type' and 'Colum; -bia; 47; 25' and '17. HOPLOPHORA CONCOLOR,'.

concolor (Oxyrhachis) Buckton, 1903a : 224. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Capetown,; C.G.H.; 28 Jan. '01.; 1147' and 'Oxyrhachis; concolor; type Buckt. ay'.

The left suprahumeral horn is broken. There is another specimen from the type-series in the collection; its abdomen is missing.

conficita (Thelia) Walker, 1858b : 139. Holotype ♀ with labels: 'Type' and 'Brazil; 51; 55' and 'THELIA CONFICITA.'.

confusa (Gargara) Distant, 1916a : 171. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Calcutta; 8–vii–07; Mus. Coll.' and 'Gargara; confusa; type Dist.'.

There is another male from the type-series in the collection.

confusus (Hebeticoides) Fowler, 1894c : 54. Holotype ♂ with labels: 'Type' and 'V. de Chiriqui,; 4000–6000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hebeticoides; confusus. Fowler; TYPE.' and the B.C.A. label.

confusus (Leptocentrus) Distant, 1916b : 151. Lectotype ♂ with labels: 'Type' and '1911–177' and 'Brit. E. Afr.; W. Slopes of Kenya.; on Meru – Nyeri Rd.; 6000 to 8,500 ft.; Feb. 16–23, 1911.; S. A. Neave.' and 'Leptocentrus; confusus; type Dist.' and 'LECTOTYPE: Leptocentrus; confusus; DIST.; A. L. Capener.'.

There are one male and two female paralectotypes in the collection (Capener 1968 : 25).

congestus (Centrotus) Walker, 1858a : 79. LECTOTYPE ♀ with labels: 'Type' and 'Ind' and 'congestus Walk'.

congestus (Centrotus) Walker, 1870a : 187. LECTOTYPE ♂ with labels: 'Type' and '68.4' and 'Sul' and 'Sula; Wallace' and 'congestus'.

conica (Thelia) Walker, 1851a : 557. Holotype ♂ with labels: 'Type' and 'E. Doubleday.; St. John's Bluff,; E. Florida.' and '41.; 5.17.; 288.' and '9. THELIA CONICA,'.

conifera (Aconophora) Butler, 1878a : 350. Holotype ♂ with labels: 'Type' and 'Mex' and '68.4' and 'A. conifera; Butler Type.'

The legs are glued separately to a card.

consobrina (Telingana) Distant, 1916a : 152. LECTOTYPE ♂ with labels: 'Type' and 'S. India.; E. A. Butler.; 1915–60.' and 'Kodai Kanal.; S. India.; T. V. Campbell.' and 'Telingana; consobrina; type Dist.'.

Orininally one of two specimens mounted on the same card, the lectotype has the tips of the tegmina and the apical part of the posterior pronotal process missing: the other specimen is lost. There are eight other specimens from the type-series in the collection.

consobrinus (Eufairmairia) Distant, 1916d : 37. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Rockhampton.' and 'Eufairmairia; consobrinus; type Dist.'.

There are nine other specimens from the type-series in the collection.

***consocius* (*Centrotus*)** Walker, 1857b : 164. LECTOTYPE ♀ with labels: 'Type' and 'SAR.' and '68.4' and 'Wallace' and 'consocius Walk'.

The abdomen is glued separately.

***constans* (*Thelia*)** Walker, 1851a : 563. Holotype ♀ with labels: 'Type' and 'Ent. Club.; 44–12.' and 'C. Doubleday; Wanbough' and '27. THELIA CONSTANS,'.

***constipatus* (*Centrotus*)** Walker, 1870a : 192. LECTOTYPE ♂ with labels : 'Type' and 'M' and '68.4' and 'Wallace' and 'constipatus'.

***constrictus* (*Clepsydrius*)** Fowler, 1895d : 95. Holotype ♂ with labels: 'Type; H.T.' and 'La Venta,; Guerrero,; 300 ft.; Sept. H. H. Smith' and 'Clepsydrius; constrictus. Fowler; TYPE.' and the B.C.A. label.

The left wing and tegmen are glued separately.

***conterminus* (*Centrotus*)** Walker, 1870a : 190. LECTOTYPE ♀ with labels: 'Type' and 'Aru' and 'Wallace' and 'conterminus'.

***continua* (*Membracis*)** Walker, 1858b : 123. Holotype with labels: 'Type' and 'Ega; Brazil; 57; 43' and 'MEMBRACIS CONTINUA.'.

The abdomen is missing.

***contorta* (*Oxyrhachis*)** Walker, 1858a : 66. LECTOTYPE ♀ with labels: 'Type' and 'N S W' and 'contorta Walk'.

The posterior pronotal process is broken. There is another female and a male from the type-series in the collection. The type-series is erroneously described as being from Tasmania.

***contractus* (*Centrotus*)** Walker, 1851a : 622. Holotype ♀ with labels: 'Type' and 'New; Holld; 44; 4' and '56. CENTROTUS CONTRACTUS,'.

***contractus* (*Centrotus*)** Walker, 1870a : 188. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Aru' and 'Wallace' and 'contractus'.

The tips of the pronotal horns are broken.

***contraria* (*Gargara*)** Distant, 1916a : 170. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Lahore; Punjab' and 'Gargaria [sic]; contraria; type Dist.'.

The abdomen is glued separately below the specimen.

***convergens* (*Centrotus*)** Walker, 1851a : 623. Holotype ♂ with labels: 'Type' and 'Phil; Isl; 42; 22' and '59. CENTROTUS CONVERGENS,'.

The abdomen is glued separately.

***convoluta* (*Membracis*)** Fabricius, 1781a : 318. LECTOTYPE ♀ with labels: 'Braz.' and '63; 47' and associated with it, though not mounted on the same pin, 'Type' and 'Membr. Convoluta; Fabr. Mant.'. The last part of this label is illegible. The 'Type' label is handwritten.

Described as 'Membracis conuoluta' [misprint], the type is from the Joseph Banks Collection.

***cornuta* (*Beaufortiana*)** Distant, 1916d : 31. Holotype ♀ with labels: 'Type' and '4' and 'Distant Coll.; 1911–383.' and 'Beaufort West,; C. G. H.; 20″ May: 01.' and 'Beaufortiana; cornuta; type Dist.'.

The tegmina have five apical cells, not four as stated in the description.

***cornuta* (*Hyphinoe*)** Distant, 1879a : 12. Holotype ♀ with labels: 'Type' and 'Irazu,; 6–7000 ft.; H. Rogers.' and 'Brit. Mus.; 1904–55.' and 'cornuta; (type) Dist.'.

***cornuta* (*Maguva*)** Funkhouser, 1932a : 116. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1933–360' and 'B. N. BORNEO.; Mt. Kinabalu,; Lumu Lumu,; 5,500 ft.; 13 : 4 : 1929.; H. M. Pendlebury; coll.; F.M.S. Museums.' and 'HOLOTYPE; Maguva cornuta; W. D. Funkhouser'.

***cornuta* (*Stictocephala*)** Fowler, 1895d : 110. LECTOTYPE ♂ with labels: 'Type' and 'Bugaba,; Panama.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Stictocephala; ♂ cornuta; Fowler. TYPE' and the B.C.A. label.

There are two other males from the type-series in the collection.

cornutus (Leprechaunus) Capener, 1953b : 116. Holotype ♀ with labels: 'Holo-; type' and 'Tang. Terr.; Ukerewe I; Father Conrads' and 'ix; 162' and 'Pres. by; Coryndon Museum.; B.M. 1960–258.' and 'HOLOTYPE' and 'Leprechaunus; cornutus; CAPENER'.

The allotype and female paratype are in the collection also.

corrugata (Bolbonota) Fowler, 1894b : 19. LECTOTYPE ♀ with labels: 'Type' and 'Taboga Isl.,; Panama.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Bolbonota; corrugata Fowler.; TYPE' and the B.C.A. label.

One of three females glued to the same card, the lectotype is indicated by an adjacent red ink spot.

corrugata var. ***minor (Bolbonota)*** Fowler, 1894b : 19. LECTOTYPE ♀ with labels: 'Type' and 'Bugaba,; 800–1,500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and '32' and the B.C.A. label.

There are four other females from the type-series in the collection.

costalis (Centrotus) Walker, 1851a : 615. Holotype ♀ with labels: 'Type' and 'Colum-; bia; 47; 25.' and '44. CENTROTUS COSTALIS,'.

costalis (Centrotus) Walker, 1858a : 82. Holotype with labels: 'Type' and 'costalis Walk'.

The abdomen is missing.

costata var. ***nigridorsis (Polyglypta)*** Fowler, 1895f : 123. LECTOTYPE with labels: 'Type' and 'San Juan,; Vera Paz.; Champion.' and 'Brit. Mus.; 1904–55.' and 'v. nigridorsis.; Fowler. TYPE' and the B.C.A. label.

The abdomen is missing. There are five females from the type-series in the collection.

costigera (Thelia) Butler, 1878a : 353. Holotype ♀ with labels: 'Type' and 'British; Guiana' and '58; 60' and 'Br. Guiana; Schonburgh' and 'T. costigera; Butler Type'.

The head is missing.

crassicornis (Xiphistes) Distant, 1915b : 323. Holotype ♀ with labels: 'Type' and 'Lesapi R.,; Mashonal'd 3–10–97.; G. A. K. Marshall; 1908–212.' and 'Xiphistes.; crassicornis; type Dist.'.

crassus (Xiphistes) Distant, 1916c : 313. Holotype ♀ with labels: 'Type' and 'Salisbury,; 5000 feet,; Mashonaland.; Capt. Oct. 1901; & Pres. 1902 by; Guy Marshall.' and 'Xiphistes; crassus; type Dist.'.

The head is missing.

cribratus (Centrotus) Walker, 1851a : 619. Holotype ♀ with labels: 'Type' and 'Jamaica; 47; 62' and '51. CENTROTUS CRIBRATUS,'.

The pronotum is damaged and the head is missing.

crinitus (Centrotus) Buckton, 1903a : 247. LECTOTYPE ♀ with labels: 'Type' and 'Kaits; Ceylon. 3.01' and 'cy' and '756' and 'Distant Coll.; 1911–383.' and 'Centrotus; crinitus; type. Buckt.'.

There are nine other specimens from the type-series in the collection.

cucullatus (Glischrocentrus) Fowler, 1896e : 161. Holotype ♀ with labels: 'Type' and 'V. de Chiriqui; 25–4000 ft; Champion.' and 'Brit. Mus.; 1904–55.' and 'Glischrocentrus; cucullatus Fowler; TYPE.' and the B.C.A. label.

cucullatus (Polyglyptodes) Fowler, 1895f : 128. LECTOTYPE ♀ with labels: 'Type' and 'Guatemala; City.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Polyglyptodes; cucullatus.; Fowler. TYPE' and the B.C.A. label.

There is another female from the type-series in the collection.

cultellata (Aconophora) Walker, 1858a : 70. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Amaz' and 'cultellata Walk'.

cumulata (Hemiptycha) Walker, 1858b : 145. Holotype ♀ with labels: 'Type' and 'Santar; em; 53; 72' and 'HEMIPTYCHA CUMULATA.'.

cuneata (Aspona) Fowler, 1894c : 51. Holotype ♀ with labels: 'Type' and 'V. de Chiriqui,; 4000–6000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aspona; cuneata; Fowler. TYPE' and the B.C.A. label.

cuneata (Bolbonota) Fowler, 1894b : 17. LECTOTYPE ♂ with labels: 'Type' and 'Bugaba,; 800–1,500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Bolbonota; cuneata Fowler; TYPE' and the B.C.A. label.

There are five other males from the type-series in the collection.

cuneata (Hebetica) Butler, 1878a : 341. LECTOTYPE ♀ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; H. Clark.; 57.43' and 'H. cuneata; Butler Type.'.

There is another female from the type-series in the collection.

cuneatus (Tricentrus) Distant, 1908g : 56. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'SOOKNA; 533 feet' and 'Centrotypus; cuneatus; type Dist.' and 'Tricentrus; cuneatus DIST.; det. Capener 1963'.

cupreus (Centrotus) Kirby, 1891a : 168. LECTOTYPE ♀ with labels: 'Type' and '40' and 'Pundaloya; Ceylon.' and 'Centrotus: cupreus; Kb type; Ceylon.; Green Coll.; 90–115.'.

There are two other females from the type-series in the collection.

cupreus (Eufairmairia) Distant, 1916d : 38. Holotype ♂ with labels: 'Type' and 'S. W. Australia.; Yallingup.; 23 Dec. 13–23 Jan. 14.; R. E. Turner.; 1914–190.' and 'Eufairmaria [sic]; cupreus; type Dist.'.

curtulus (Centrotus) Walker, 1870a : 190. LECTOTYPE ♂ with labels: 'Type' and 'M.' and '68.4' and 'Wallace' and 'curtula'.

curvicorne (Enchenopa) Walker, 1858a : 62. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'V Cruz' and 'Vera; Cruz.' and 'curvicorne Walk'.

The anterior pronotal process is damaged.

curvicornis (Ophicentrus) Buckton, 1903a : 250. Holotype ♀ with labels: 'Type' and 'Buckton; (Coll)' and 'Stephansort; D.N.Guin.ae; Centrotus; strigata West.' and 'Ophicentrus; curvicornis; (type) Buckt.; = Otinotoides; strigatus; Walk.'.

curvidens (Otinotus) Distant, 1916b : 154. Holotype ♀ with labels: 'Type' and 'Cameroons.; Escalera.; 1903–355.' and 'Otinotus; curvidens; type Dist.'.

curvilinea (Ceresa) Walker, 1858b : 132. LECTOTYPE ♀ with labels: 'Type' and 'Brazil; 51; 55' and 'CERESA CURVILINEA.'.

There is also a male from the type-series in the collection.

curvilinea (Membracis) Walker, 1858a : 58. LECTOTYPE ♀ with labels: 'Type' and '68.4' and '28' and 'Para' and 'curvilinea Walk'.

curvispina (Parmula) Walker, 1858b : 152. Holotype ♀ with labels: 'Type' and 'Brazil; Santarem; 52; 96' and 'PARMULA CURVISPINA.'.

curvispina (Tricoceps) Distant, 1916c : 322. LECTOTYPE ♂ with labels: 'Type' and 'Neave Coll.; 1907–230.' and 'Kambove,; Katanga.; 25. III. 1907.; 4,000–5,000 ft.' and 'Trioceps [sic]; curvispina; type Dist.'.

There are two other males and two females from the type-series in the collection.

darnioides (Thelia) Walker, 1858b : 140. Holotype ♂ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; H. Clark.; 57.43.' and 'THELIA DARNIOIDES.'.

decipiens (Centrotus) Kirby, 1891a : 165. Holotype ♀ with labels: 'Type' and 'Ceylon; 60; 34' and 'decipiens; Walk; M.S.; Kirby; type.' and 'Telingana; curvispina; (STAL); det. CAPENER.' and 'COMPARED; WITH TYPE; A. L. Capener; Aug. 1963.'.

decisa (Entylia) Walker, 1851a : 548. Holotype ♀ with labels: 'Type' and 'E.; Florida' and '41.; 5.17.; 311.' and 'E. Doubleday.; St. John's Bluff.; E. Florida.' and 'decisa'.

decisus (Centrotus) Walker, 1851a; 621. Holotype ♀ with labels: 'Type' and 54. CENTROTUS DECISUS,'.

declivis (Umfilianus) Distant, 1915c : 496. Holotype ♂ with labels: 'Type' and 'Umfili River; Mashunulad; (Guy Marshall)' and 'Distant Coll.; 1911–383.' and 'Umfilianus; declivis; type Dist.'.

The tips of the tegmina are missing.

decoloratus (Coccosterphus) Distant, 1908g : 71. LECTOTYPE ♂ with labels: 'Type' and 'Cal' and 'Distant Coll.; 1911–383.' and 'Coccosterphus; decoloratus; type Dist.'.

Glued to the same card as three females, the lectotype is indicated by an adjacent red ink spot. There are three other females from the type-series in the collection.

decorata (Umbonia) Walker, 1858b : 130. Holotype ♀ with labels: 'Type' and 'mex.; 56; 143' and 'UMBONIA DECORATA.'.

decoratus (Tricentrus) Distant, 1908g : 58. Holotype ♀ with labels: 'Type' and 'Distant Coll; 1911–383.' and 'Momeit; (Doherty)' and 'decoratus; type Dist..'

The posterior pronotal process is lost.

deflectens (Demanga) Distant, 1915c : 494. LECTOTYPE ♂ with labels: 'Type' and 'German E. Af.; Ruanda Dist.; Dr C. H. Marshall.; 1912–528.' and 'Demanga; deflectens; type Dist.'.

There are two females from the type-series in the collection also.

delalandei (Oxyrhachis) Fairmaire, 1846a : 268. Neotype ♀ with labels: 'Type' and 'Cape' and '68.4' and 'Cape of Good Hope; Drege Coll.; Brit. Mus. 1868–4.' and 'Gongroneura; Oxyrhachis; fasciatum = ; delalandei Fairm.; det. R. J. Izzard. 195; NEOTYPE.' and 'Oxyrhachis; delalandei; FAIRMAIRE; NEOTYPE; A. L. CAPENER; 1960'.

The neotype designation was published by Capener (1962 : 25).

delimitata (Gargara) Distant, 1908g : 66. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Margherita' and 'Gargara; delimenata [sic]; type Dist.'.

delineatus (Heteronotus) Walker, 1858b : 154. Holotype ♂ with labels: 'Type' and 'Ega; Brazil; 57; 43'.

The apex of the posterior pronotal process is missing.

densa (Enchenopa) Walker, 1851a : 490. Holotype ♂ with labels: 'Type' and 'Colum; -bia; 47; 25' and '35. ENCHENOPA DENSA,'.

The anterior pronotal process is broken.

densus (Centrotus) Walker, 1857b : 163. LECTOTYPE ♀ with labels: 'Type' and 'SAR' and 'Borneo; 57; 36' and 'CENTROTUS DENSUS.'.

It was erroneously described as a male. It is stylopized.

densus (Centrotus) Walker, 1870a : 189. LECTOTYPE ♀ with labels: 'Type' and 'Wallace' and 'Densus'.

The left tegmen is missing.

diabolica (Hyphinoe) Butler, 1878a : 346. Holotype ♀ with labels: 'Type' and '68.4' and 'H. diabolica; Butler Type.'.

difficilis (Beaufortiana) Distant, 1916d : 31. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Beaufort West; C. G. H.; 20″ May. '01.' and 'Beaufortiana; difficilis; type Dist.' and 'Beaufortiana; cornuta DIST.; det. CAPENER.'.

diffusa (Hemiptycha) Walker, 1858b : 143. Holotype ♀ with labels: 'Type' and 'Canada; W; 56; 13' and 'HEMIPTYCHA DIFFUSA.'.

dilatatus (Centrotus) Walker, 1851a : 630. Holotype ♀ with labels: 'Type' and 'Phil; Isl; 42; 22' and '74. CENTROTUS DILATATUS.'.

The head is missing.

dilaticornis (Oxyrhachis) Walker, 1851a : 507. Holotype ♀ with labels: 'Type' and '1934' and '9. OXYRHACHIS DILATICORNIS,'.

dipteroides (Parantonae) Fowler, 1895d : 101. Holotype with labels: 'Type' and 'Aceytuno; 5100' and '75.28.' and 'Parantonae; dipteroides. Fowler; TYPE.'.

The abdomen is lost.

discalis (Horiola) Walker, 1858b : 154. Holotype with labels: 'Type' and 'Vera; Cruz; 54; 66' and 'HORIOLA DISCALIS.'.

The abdomen is lost.

discontinua (Combophora) Walker, 1858b : 157. LECTOTYPE ♀ with labels: 'Type' and 'Ega; 56; 84' and 'COMBOPHORA DISCONTINUA.'.

There is a male from the type-series in the collection also.

discrepans (Tragopa) Walker, 1858b : 150. LECTOTYPE ♂ with labels: 'Type' and 'Santar; em; 53.; 60.' and 'TRAGOPA DISCREPANS.'.

The lectotype is one of three specimens (two males and a female) previously mounted on the same pin, which I have now mounted separately.

discreta (Platycotis) Fowler, 1894c : 42. LECTOTYPE ♀ with labels: 'Type' and 'San Joaquin,; Vera Paz.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Platycotis; discreta Fowler; TYPE' and the B.C.A. label.

There is another female from the type-series in the collection, labelled 'var', but not described as such.

dispar (Polyglypta) Fowler, 1895f : 126. LECTOTYPE ♀ with labels: 'Type' and '♀' and 'V. de Chiriqui,; 4,000–6,000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Polyglypta; dispar Fowler; ♀ TYPE.' and the B.C.A. label.

There are two other females and three males from the type-series in the collection.

disparicornis (Aconophora) Fowler, 1895a : 69. LECTOTYPE ♂ with labels: 'Type' and '♂' and 'V. de Chiriqui,; 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; disparicornis. ♂; Fowler. TYPE.' and the B.C.A. label.

There is another male and a female from the type-series in the collection.

disparipes (Hoplophora) Fowler, 1894c : 40. LECTOTYPE ♂ with labels: 'Type' and 'S. Geronimo,; Guatemala.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hoplophora; disparipes Fowler; ♂ TYPE' and the B.C.A. label.

There is another male and two females from the type-series in the collection.

disrupta (Darnis) Walker, 1858a : 74. LECTOTYPE with labels: 'Type' and 'Amaz' and '68.4' and 'disrupta Walk'.

The abdomen is missing.

dissimilis (Parayasa) Distant, 1916a : 179. Holotype ♂ with labels: 'Type' and 'Kodai Kanal.; S. India.; T. V. Campbell.' and 'S. India.; E. A. Butler.; 1915–60.' and 'Parayasa; dissimilis; type Dist.'.

dissimilis (Pogontypus) Distant, 1916a : 173. Holotype ♀ with labels: 'Type' and 'Green.; Ceylon.; 95–221.' and 'Pogontypus?; dissimilis; type Dist.'.

The pronotum is damaged.

distans (Ceresa) Butler, 1877a : 218. Holotype with labels: 'Type' and 'Para; 48; 133' and 'C. distans; Butler Type'.

The abdomen is missing.

distinctus (Eufairmairia) Distant, 1916d : 38. Holotype ♀ with labels: 'Type' and '541' and 'Distant Coll.; 1911–383.' and 'G. F. Hill; 30 m. E; Darwin, N. T.' and 'Eufairmaria [sic]; distinctus; type Dist.'.

distinguenda (Parmula) Fowler, 1895d : 91. LECTOTYPE ♀ with labels: 'Type' and 'Teleman,; Vera Paz.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Parmula; distinguenda; Fowler. TYPE' and the B.C.A. label.

One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot. There are two other females and a male from the type-series in the collection.

distinguenda (Trachytalis) Fowler, 1895e : 115. LECTOTYPE ♂ with labels: 'Type' and 'Cuernavaca,; Morelos.; June. H. H. S.' and 'Brit. Mus.; 1904–55.' and 'Trachytalis; distinguenda; Fowler. TYPE' and the B.C.A. label.

There is another male from the type-series in the collection.

distinguendus (Cyrtolobus) Fowler, 1896c : 141. Holotype ♀ with labels: 'Type' and 'Amula,; Guerrero,; 6000 ft.; Aug. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and '36' and 'Cyrtolobus; distinguendus; Fowler. TYPE' and the B.C.A. label.

***divisa* (*Membracis*)** Walker, 1858b : 123. Holotype ♀ with labels: 'Type' and 'Brazil; Santarem; 52; 96' and 'MEMBRACIS DIVISA.'.
The pronotum is damaged.

***divisus* (*Heteronotus*)** Walker, 1858b : 156. Holotype ♀ with labels: 'Type' and '68.4' and 'Para; Ipr'.
The posterior pronotal process is missing and the wings and tegmina are damaged.

***doddi* (*Otinotus*)** Distant, 1916d : 40. Holotype ♀ with labels: 'Type' and 'Townsville, Qld; July '03; F. P. Dodd.' and 'Queensland.; F. P. Dodd.; 1907–54.' and 'Otinotus; doddi; type Dist.'.

***dorsalis* (*Telamona*)** Buckton, 1903a : 197. LECTOTYPE with labels: 'Type' and 'B; 202' and 'New; York; C.; 8.17' and 'Telemona [sic]; dorsalis'.
The abdomen is missing.

***doryensis* (*Arimanes*)** Distant, 1916e : 290. Holotype ♀ with labels: 'Type' and '59.58. Dory,; New Guinea.' and 'Arimanes.; doryensis; type Dist.'.
The left suprahumeral horn is damaged.

***dubia* (*Micrutalis*)** Fowler, 1895e : 119. Holotype ♀ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Micrutalis; dubia. Fowler; TYPE' and the B.C.A. label.
The right tegmen is glued separately.

***dubia* (*Ochropepla*)** Fowler, 1894c : 45. Holotype ♂ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Ochropepla; dubia. Fowler; TYPE.' and the B.C.A. label.

***dubia* (*Phacusa*)** Fowler, 1895d : 112. LECTOTYPE ♂ with labels: 'Type' and 'Cerro Zunil,; 4–5000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Phacusa; dubia Fowler.; TYPE.' and the B.C.A. label.
There are three females from the type-series in the collection also.

***dubia* (*Philya*)** Fowler, 1894b : 22. Holotype ♀ with labels: 'Type' and 'Chilpancingo,; Guerrero, 4600 ft.; June. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Philya; dubia Fowler.; TYPE.' and the B.C.A. label.
Only the abdomen and legs remain, the rest of the specimen being lost.

***dubia* (*Stictocephala*)** Fowler, 1895d : 109. LECTOTYPE ♂ with labels: 'Type' and 'Teapa,; Tabasco.; Feb. H. H. S' and 'Brit. Mus.; 1904–55.' and 'Stictocephala; dubia. Fowler; TYPE.' and the B.C.A. label.
There are sixteen other specimens from the type-series in the collection.

***dubia* var. *major* (*Stictocephala*)** Fowler, 1895d : 109. LECTOTYPE ♀ with labels: 'Type' and '♀' and 'Chilpancingo,; Guerrero, 4600 ft.; June. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Stictocephala; dubia. v. major; Fowler. TYPE' and the B. C. A. label.
There are two males from the type-series in the collection also.

***dubium* (*Enchophyllum*)** Fowler, 1894b : 8. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and '♀' and 'Enchophyllum; dubium Fowler; TYPE.' and the B.C.A. label.
There are two other females from the type-series in the collection.

***echinatum* (*Anchon*)** Distant, 1908g : 51. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall.; Myitta; (Doherty).' and 'Anchon; echinatus; type Dist.'.

***egyptianus* (*Oxyrhachis*)** Distant, 1915b : 322. Holotype ♂ with labels: 'Type' and 'Upper Egypt,; Northern Etbai.; D. MacAlister.; 1900–223.' and 'Oxyrhachis; egyptianus; type Dist.'.

***elegans* (*Centrogonia*)** Fowler, 1895d : 107. Holotype ♀ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Centrogonia; elegans. Fowler; TYPE.' and the B.C.A. label.

elegantula (Parayasa) Distant, 1916a : 178. LECTOTYPE ♀ with labels: 'Type' and 'Pusa Coll.' and 'Pusa Coll.; 1915–164.' and 'Somerdale; Ootacamund.; E. E. Green.; May. 1910.' and 'Parayasa; elangatula [sic]; type Dist.'.

There is another female from the type-series in the collection.

elephas (Foliatrotus) Capener, 1953b : 120. Holotype ♂ with labels: 'Type' and 'HOLOTYPE' and 'DRAWING; No 198; A. L. Capener' and 'Brit. Mus; 1954–606.' and 'COLL. NO. C520; IDENT. NO.' and 'Uganda, Elgon. 6000 ft; Bulago.; Arabica.; on Coffee 22/7/1948; A. P. G. Michelmore' and 'Foliatrotus; elephas; CAPENER.'.

elevatus (Otinotoides) Funkhouser, 1935d : 431. Holotype ♀ with labels: 'Type; H.T.' and 'SOLOMON IS.; Bougainville; H. W. Simmonds' and 'Pres. by; Imp. Inst. Ent.; B.M. 1935–224.' and 'HOLOTYPE; Otinotoides elevatus; W. D. Funkhouser'.

elongata (Stictocephala) Fowler, 1895d : 110. Holotype ♀ with labels: 'Type' and '♀' and 'Ciudad, Mex.,; 8100 ft.; Forrer.' and 'Brit. Mus.; 1904–55.' and 'Stictocephala; elongata Fowler; TYPE' and the B.C.A. label.

elongatus (Otinotus) Distant, 1908g : 41. LECTOTYPE ♂ with labels: 'Type' and 'Calcutta.' and 'Distant Coll.; 1911–383.' and 'Otinotus; elongatus; type Dist.'.

The head and legs are missing. There is a female from the type-series in the collection also.

ensata (Aconophora) Fowler, 1895a : 68. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui.; 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; ensata Fowler; TYPE.' and the B.C.A. label.

One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot. There are five other females from the type-series in the collection.

erectus (Xiphopoeus) Distant, 1914b : 152. LECTOTYPE ♂ with labels: 'Type' and '1912–193' and 'Uganda Prot.; Kafu R. near Hoima; Kampala Rd. 3,500 ft.; 29–31. Dec. 1911.; S. A. Neave.' and 'Xiphophoeus [sic]; erectus; type Dist.'.

There is another male from the type-series in the collection.

erigens (Centrotus) Walker, 1851a : 614. Holotype ♀ with labels: 'Type' and 'Phil; Isla; 42; 22' and '43. CENTROTUS ERIGENS,'.

The head is missing.

escaleranus (Platybelus) Distant, 1916c : 324. LECTOTYPE ♀ with labels: 'Type' and 'Cameroons.; Escalera.; 1903–355.' and 'Platybelus; escaleranus; type Dist.'.

There is another female from the type-series in the collection.

euschistus (Tricentrus) Distant, 1916a : 164. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Tricentrus; euschistus; type Dist.'.

exaltata (Pterygia) Walker, 1851a : 502. Holotype ♂ with labels: 'Type' and 'Brasil; 43; 86' and '16. PTERYGIA EXALTATA,'.

exaltata (Thelia) Walker, 1858b : 140. Holotype ♀ with labels: 'Type' and 'Santar; em; 53; 72' and 'THELIA EXALTATA.'.

excelsior (Enchenopa) Walker, 1858a : 61. LECTOTYPE ♀ with labels: 'Type' and 'Venez' and 'Venezuela' and '68.4' and 'excelsior Walk.'.

The anterior pronotal process is damaged.

excisa (Ceresa) Walker, 1858a : 68. LECTOTYPE with labels: 'Type' and '68.4' and 'excisa Walk'.

The abdomen, both wings, and the left tegmen are lost.

excisus (Heteronotus) Walker, 1851a : 593. Holotype ♂ with labels: 'Type' and 'Para; 49.; 2' and '5. HETERONOTUS EXCISUS,'.

exemplificatus (Insitor) Distant, 1916a : 176. Holotype ♀ with labels: 'Type' and 'Nilgiri Hills; S. India; T. V. Campbell' and '446' and '4; 515; 44; 6' and 'Insitor; exemplificatus; type Dist.'.

exigua (Otinotus) Buckton, 1903a : 232. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Centruchoides; exigua Type; Natal Buckt.'.

There are two other males and a female from the type-series in the collection.

expansa var. ***humilis (Antianthe)*** Fowler, 1896c : 138. LECTOTYPE ♂ with labels: 'Type' and 'Temax,; N. Yucatan.; Gaumer.' and 'Brit. Mus.; 1904–55.' and 'Janthe expansa; var humilis. Fowler; TYPE' and the B.C.A. label.

There are seventeen other specimens from the type-series in the collection.

expansa (Membracis) Walker, 1851a : 475. Holotype ♀ with labels: 'Type' and 'Vene; zuela; 47; .1' and '8. MEMBRACIS EXPANSA.'.

extensa (Ceresa) Walker, 1858a : 69. LECTOTYPE ♀ with labels: 'Type' and 'extensa Walk'.

extensa (Oxygonia) Walker, 1851a : 554. LECTOTYPE ♂ with labels: 'Type' and 'Ent. Club.; 44–12.' and '20. OXYGONIA EXTENSA,'.

There is another male from the type-series in the collection.

extrema (Gargara) Distant, 1916a : 171. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Peradeniya,; Ceylon, 5–09' and 'Gargara; extrema; type Dist.'.

falcatus (Centrotus) Walker, 1851a : 622. Holotype ♂ with labels: 'Type' and '38; 10 22; 88' and '57. CENTROTUS FALCATUS,'.

The left tegmen is missing.

falcatus (Ibiceps) Buckton, 1903a : 239. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Taurcus; falcatus' and 'Ibiceps; falcatus; type gen. Buckt.'.

There is another female from the type-series in the collection.

falco (Campylocentrus) Buckton, 1903a : 243. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Campylocentrus; falco Buckt; type; Luzon'.

There is another female from the type-series in the collection.

fasciata (Adippe) Buckton, 1903a : 189. LECTOTYPE ♂ with labels: 'Type' and 'Rio Dagua; Columbia' and 'Adippe; fasciata.'.

fasciata (Cryptaspidia) Funkhouser, 1936c : 248. Holotype ♂ with labels: 'Type' and 'Berenag; 3–6,000′ Almora,; U. P. R. N. Parker; 30–31. vii. 1923.' and '226' and 'Brit. Mus.; 1936–222' and 'HOLOTYPE; Cryptaspidia fasciata; W. D. Funkhouser'.

fasciata (Cyphonia) Butler, 1877a : 214. Holotype ♂ with labels: 'Type' and 'Brazil; 43; 86' and 'C. fasciata; Butler Type' and '3. CYPHONIA CAPRA?'.

fasciatum (Pedalion) Buckton, 1903a : 253. Holotype ♂ with labels: 'Type' and 'Capetown.; C. G. H.; Mch. 8″.00' and 'cf; Pedalion; fasciatum; Type Buckt.'.

The suprahumeral horns are broken.

felinus (Centruchoides) Haviland, 1925a : 257. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo; Brit. Guiana; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; July, 1922; e. coll M. D. Haviland; d.d. Collegium Newnhamense.' and 'Centruchoides; felinus; Haviland.'.

There is a male from the type-series in the collection also.

femoratus (Centrotus) Walker, 1870a : 186. LECTOTYPE ♀ with labels: 'Type' and 'Celeb; Wallace' and 'Mak.' and 'femoratus'.

The head is missing.

fenestrata (Tragopa) Walker, 1858b : 151. Holotype ♂ with labels: 'Type' and 'Santar; -em; 53.; 60.' and 'TRAGOPA FENESTRATA.'.

ferruginea (Aconophora) Fowler, 1895a : 69. LECTOTYPE ♂ with labels: 'Type' and 'Bugaba,; 800–1,500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; ferruginea; Fowler. TYPE.' and the B.C.A. label.

There are two other males from the type-series in the collection.

ferruginea (Enchenopa) Walker, 1851a : 489. Holotype ♀ with labels: 'Type' and '68.4' and 'Colum-; bia; 47; 25' and 'Colombia' and '34. ENCHENOPA FERRUGINEA,'.

ferrugineus (Centrotus) Walker, 1870a : 187. LECTOTYPE ♀ with labels: 'Type' and 'N' and '68.4' and 'N Gui; Wallace' and 'ferrugineus'.

The posterior pronotal process is missing.

festivus (Acanthuchus) Distant, 1916d : 28. Holotype ♂ with labels: 'Type' and 'Queensland.; F. P. Dodd.; 1907–54.' and 'Kuranda; Qld.' and 'Sept 04" F. P. Dodd.' and 'Acanthus [sic]; festivus; type Dist.'.

The generic name is also mis-spelt in the description.

festivus (Crito) Distant, 1916d : 43. Holotype ♂ with labels: 'Type' and 'Queensland.; F. P. Dodd.; 1907–54.' and 'Crito; festivus; type Dist.'.

fidelis (Kombazana) Distant, 1908h : 218. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Johsbg. T.; 5/5/01.' and 'Kombazana; fidelis; type Dist.'.

There are two other females and a male from the type-series in the collection also.

figurata (Oxygonia) Walker, 1858b : 137. LECTOTYPE ♀ with labels: 'Type' and 'Mexico.' and '58.135 MEX.; (Oajaca.)' and 'OXYGONIA FIGURATA.'.

Though the description mentions only two specimens, there are three others in the collection which appear to be from the type-series; two are female and the other has the abdomen missing.

finitimus (Centrotus) Walker, 1851a : 628. Holotype ♀ with labels: 'Type' and 'Hong; Kong; 48; 60' and '67. CENTROTUS FINITIMUS,'.

The abdomen and right tegmen are glued separately.

fissa (Enchenopa) Walker, 1851a : 485. Holotype ♀ with labels: 'Type' and 'BZ' and '42; 16' and '26. ENCHENOPA FISSA,'.

The pronotal horns are broken and most of the legs are missing.

flavescens (Centrotypus) Distant, 1908g : 35. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Ind' and 'Centrotypus; flavescens; type. Dist.'.

There is another female from the type-series in the collection.

flavipes (Centrotus) Kirby, 1891a : 165. Holotype ♀ with labels: 'Type' and '45' and 'N. pitia' and 'Centrotus; flavipes; Kb. type; Ceylon.; Green Coll.; 90–115.'.

flavivitta (Centrotus) Walker, 1851a : 617. LECTOTYPE ♂ with labels: 'Type' and 'Jamaica; 46; 84.' and '48. CENTROTUS FLAVIVITTA,'.

There is another male from the type-series in the collection.

flavocarinata (Gargara) Funkhouser, 1927b : 8. Holotype ♂ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Fort de Kock; (Sumatra) 920M; 1925; leg. E. Jacobson.' and 'Gargara; flavocarinata; ♂ HOLOTYPE; W. D. Funkhouser'.

flavocostatus (Polyglyptodes) Haviland, 1925a : 255. Holotype ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; August, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Polyglyptodes.; flavocostatus; Haviland'.

flavolineata (Gargara) Distant, 1908g : 65. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll; 1911–383.' and 'Ranchi; Irvine.' and 'Gargara; flavolineata; type Dist.'.

Glued to the same card as three males, the lectotype is indicated by an adjacent red ink spot. There is another male and a female from the type-series in the collection.

flavolineatus (Centrotus) Buckton, 1903a : 247. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Centrotus; flavolineatus; type; cd; type'.

There are two males and a specimen with the abdomen missing also from the type-series in the collection.

flexa (Membracis) Walker, 1858a : 58. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Venez' and 'flexa Walk'.

The right tegmen is missing.

flexicorne (Centrotus) Walker, 1858a : 78. LECTOTYPE with labels : 'Type' and 'North; Ind' and 'flexicorne Walk'.

The abdomen and the posterior pronotal process are missing.

floralis (Hypsauchenia) Buckton, 1903a : 210. Holotype ♀ with labels: 'Type' and 'Pegu' and 'Distant Coll; 1911–383.' and 'Hupsochenia [sic]; floralis; type Buckt.'.

Though published as 'Hypsauchenia floralis, var?', successive authors have regarded the name as valid and assumed the inclusion of the word 'var?' to be in error.

formicarius (Ebhul) Distant, 1916a : 169. LECTOTYPE ♂ with labels: 'Type' and 'Pusa Coll' and 'Pusa Coll.; 1915–164.' and 'U. Burma; Maymyo: 3500 ft,; 19–21 viii 14; Fletcher coll' and 'Common on garden; plants at Maymyo.; Attended by ants.; T. B. F.' and 'Ebhul; formicarius; type Dist.'.

There is also a female from the type-series in the collection.

formidabilis (Oxyrhachis) Distant, 1916a : 146. LECTOTYPE ♂ with labels: 'Type' and 'United Prov.,; Forest Dept.,; Dehra Dun.; Dr. A. W. Imms.; 1915–228.' and 'For Zool. coll; suraj Bagh; Dehra Dun; 9–7–17.' and 'Oxyrhachis; formidabilis; type Dist.'.

There are another male and a female from the type-series in the collection.

formidanda (Micreune) Walker, 1857a : 94. LECTOTYPE ♀ with labels: 'SING.' and '91; 118' and 'Wallace.'.

The specimen in the collection which previously bore the 'Type' label was not of Walker's original series and was not, therefore, selected as lectotype.

formosa (Cyphonia) Butler, 1877a : 214. Holotype ♀ with labels: 'Type' and '68.4' and 'C. formosa; Butler Type.'.

forticornis (Centrotus) Walker, 1870a : 185. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Mak.' and 'Celeb; Wallace' and 'firticornis [sic]'.

The head is missing.

fortis (Ceresa) Walker, 1858b : 132. Holotype ♂ with labels: 'Type' and 'TEJUCA; Jany. 1857.; H. Clark; 57.50' and 'CERASA [sic] FORTIS.'.

The generic name is similarly mis-spelt in the description.

fraterna (Gargara) Distant, 1915c : 490. Holotype ♀ with labels: 'Type' and 'Addah,; Gold Coast.; H. T. Palmer.; 1912. 142.' and 'Gargara; fraterna; type Dist'.

fraterna (Stictopelta) Butler, 1878a : 340. LECTOTYPE ♀ with labels: 'Type' and '58.135 MEX.; (Oajaca.)' and 'S. fraterna; Butler Type.'.

There is another female from the type-series in the collection.

fraternus (Eufairmairia) Distant, 1916d : 36. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Gayndah; Queensland' and 'Eufairmaria [sic]; fraternus; type Dist.'.

There are four other females and two males from the type-series in the collection.

trigida (Enchenopa) Walker, 1851a : 490. LECTOTYPE ♀ with labels: 'Type' and 'R' and '803' and '36. ENCHENOPA FRIGIDA,'.

There are four other females from the type-series in the collection.

funkhouseri (Amastris) Haviland, 1925a : 251. Holotype ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; August, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Amastris; funkhouseri; Haviland'.

fusca (Polyglypta) Butler, 1877a : 208. Holotype ♂ with labels: 'Type' and 'Mexico.' and 'Mex' and '68.4' and 'P. fusca; Butler Type'.

fusca (Stictocephala) Fowler, 1895d : 109. LECTOTYPE ♀ with labels : 'Type' and 'Presidio,; Mexico.; Forrer.' and 'Brit. Mus.; 1904–55.' and 'Stictocephala; fusca; Fowler. TYPE' and the B.C.A. label.

There are another female and a specimen without an abdomen from the type-series in the collection.

fuscata (Cyphonia) Buckton, 1902a: 165. Holotype ♀ with labels : 'Type' and 'Para' and 'Miss Pascoe; 69–41.' and 'Cyphonia; fuscata; (type) Buckt.'.

fuscata (Ochropepla) Fowler, 1897a : 173. Holotype ♂ with labels: 'Type' and 'Omilteme, Guerrero,; '8000 ft.; July. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Ochropepla; fuscata Fowler.; TYPE' and the B.C.A. label.

fuscipennis (Centrotus) Germar, 1835a : 256. Holotype ♂ with labels: 'Type' and '1231.' and 'C. G. H.; 42; 77' and '1281 Centrotus fuscipennis G. . . .'.

The abdomen is glued separately.

fusifera (Membracis) Walker, 1858a : 58. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Para' and 'fusifera Walk'.

fusiformis (Aconophora) Fowler, 1895a : 69. LECTOTYPE ♀ with labels: 'Type' and '♂' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; fusiformis ♂; Fowler. TYPE' and the B.C.A. label.

The labels referring to the lectotype as '♂' are in error. There is another female from the type-series in the collection.

galeata (Enchenopa) Walker, 1851a : 486. Holotype ♀ with labels: 'Type' and 'Para; 50; 2' and '29. ENCHENOPA GALEATA.'.

gibba (Telamona) Buckton, 1903a : 197. LECTOTYPE ♀ with labels: 'Type' and 'Bogota' and 'Telemona [sic]' and 'Pres. by; National Museum; of Wales; ex Rip[p]on Coll.; B.M. 1931–199.' and 'Telamona; gibba Buckt.; TYPE; det. W. E. China 1931.'.

gibbicorne (Centrotus) Walker, 1858a : 76. LECTOTYPE ♀ with labels: 'Type' and 'S.; America.' and '68.4' and 'gibbicorne Walk'.

The tip of the posterior pronotal process is missing.

gibbosa (Hemiptycha) Walker, 1858b : 142. Holotype ♀ with labels: 'Type' and 'Ega; 56.; 24' and 'HEMIPTYCHA GIBBOSA'.

gibbosa (Hypsauchenia) Distant, 1908g : 12. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Ruby Mines; (Doherty)' and 'Hypsauchenia; type gibbosa Dist.'.

gibbosulus (Centrotus) Walker, 1858a : 80. LECTOTYPE ♂ with labels: 'Type' and 'Ind' and 'gibbosulus Walk'.

The specimen is badly damaged.

gibbosulus (Centrotus) Walker, 1870a : 187. LECTOTYPE ♀ with labels: 'Type' and 'M.' and 'Wallace' and '68.4' and 'gibbosulus'.

The right wing and tegmen are lost.

gigantea (Aconophora) Butler, 1878a : 352. Holotype ♀ with labels: 'Type' and 'Ega; 58; 6' and 'A. gigantea; Butler Type'.

gladiator (Thelia) Walker, 1851a : 567. Holotype ♀ with labels: 'Type' and 'Para; 40; 2' and '38. THELIA GLADIATOR,'.

globosa (Boethoos) Haviland, 1925a : 250. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; August, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Boëthoös; globosa; Haviland'.

gnomon (Rabduchus) Buckton, 1903a : 251. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Cammeroons; W. Africa' and 'Rhabdouchus [sic]; type gnomon.; Buckt.'.

There is a female from the type-series in the collection also.

godingi (Cebes) Distant, 1916d : 39. Holotype with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Buckton; Coll.' and 'Australia' and 'Centruchoides; rubridorsi' and 'Cebes; godingi; type Dist.'.

The head, abdomen and right tegmen are missing.

godmani (Alcmeone) Fowler, 1895a : 72. Holotype ♂ with labels: 'Type' and 'Jalisco, Mex.; July.; Schumann.' and 'Brit. Mus.; 1904–55.' and 'Alcmeone; Godmani Fowler; TYPE.' and the B.C.A. label.

gowdeyi (Platybelus) Distant, 1916c: 325. Holotype ♀ with labels: 'Type' and 'Mabira Forest.; Chagwe.; 17–20. VII. 11.' and 'Uganda.; C. C. Gowdey.; 1912–461.' and 'Platybelus; gowdeyi; type Dist.'.

grahami (Amitrochates) Distant, 1916c : 328. LECTOTYPE ♀ with labels: 'Type' and

'Obuasi,; Ashanti.; Dr. W. M. Graham.; 1908–272.' and 'on leaf; 9. 7. 07.' and 'Amitochrates [sic]; grahami; type Dist.'.

There are two other females from the type-series in the collection.

***granulatus* (*Centrotus*)** Kirby, 1891a : 166. LECTOTYPE ♂ with labels: 'Type' and 'Pundaloya; Ceylon. 8' and 'Centrotus; granulatus; Kb type; Ceylon.; Green Coll.; 90–115.'.

There is also a female from the type-series in the collection.

***greeni* (*Yasa*)** Distant, 1908g : 74. LECTOTYPE ♀ with labels; 'Type' and 'Peradeniya,; Ceylon, 4.05' and 'Distant Coll.; 1911–383.' and 'Yasa; greeni; type Dist.'.

There are two other females from the type-series in the collection.

***grisea* (*Adippe*)** Fowler, 1896b : 136. Holotype ♀ with labels: 'Type' and 'Bugaba,; 800–1500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Adippe; grisea Fowler; TYPE.' and the B.C.A. label.

***grossus* (*Leptocentrus*)** Distant, 1916c : 315. LECTOTYPE ♀ with labels: 'Type' and '1913–171.' and 'Entebbe,; Uganda.; Aug. 1912.; C. A. Wiggins.' and 'Leptocentrus; grossus; type Dist.'.

There are four other females from the type-series in the collection.

***guerreroensis* (*Godingia*)** Fowler, 1896c : 139. LECTOTYPE ♂ with labels: 'Type' and '♂' and 'Omilteme,; Guerrero,; 8000 ft.; July. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Godingia; guerrensis [sic]. Fowler; TYPE. ♂' and the B.C.A. label.

There are also two females from the type-series in the collection.

***guianae* (*Tragopa*)** Haviland, 1925a : 247. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo, Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; August, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Tragopa; guianae; Haviland'.

***guttifera* (*Aconophora*)** Walker, 1851a : 539. Holotype ♂ with labels: 'Type' and 'E. Doubleday.; St. John's Bluff,; E. Florida.' and '41.; 517.; 286' and '15. ACONOPHORA GUTTIFERA,'.

***guttipes* (*Cyphonia*)** Walker, 1858b : 157. Holotype with labels: 'Type' and 'S. Amer; napo; 51; 70' and 'CYPHONIA GUTTIPES.'.

The abdomen and right tegmen are missing.

***hadina* (*Aconophora*)** Butler, 1878a : 349. Holotype ♀ with labels: 'Type' and 'Brasil; 43; 86' and 'A. hadina; Butler Type' and 'INCUMBENS.'.

***haeretica* (*Adippe*)** Distant, 1900a : 694. LECTOTYPE ♀ with labels: 'Type' and 'Chontales,; Nicaragua; Janson.' and 'Brit. Mus.; 1904–55.' and 'Adippe; haeretica, (type) Dist.' and 'Adippe; maculata; Distant.' and the B.C.A. label.

The description of this species is in Fowler, 1896b : 134. There are two other females and two males from the type-series in the collection.

***harrisi* (*Eufairmairia*)** Distant, 1916d : 35. Holotype ♀ with labels: 'Type' and '113.' and 'Distant Coll.; 1911–383.' and 'Queensland; Museum.' and 'Eufairmairia; harrisi.; type Dist.'.

***hebes* (*Triquetra*)** Walker, 1851a : 525. Holotype ♀ with labels: 'Type' and 'Colum-; bia; 47; 25' and '17. TRIQUETRA HEBES,'.

The tegmina and the left wing are missing.

***herbicola* (*Hille*)** Haviland, 1925a : 255. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; June, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Hille herbicola; Haviland'.

There are five other females and two males from the type-series in the collection.

***hirsuta* (*Gelastigonia*)** Haviland, 1925a : 256. LECTOTYPE ♂ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B M. 1925–519.' and 'Kartabo, Brit. Guiana; July, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Oxygonia; hirsuta; Haviland'.

***hispida* (*Cyphonia*)** Walker, 1858b : 156. Holotype ♂ with labels: 'Type' and 'TEJUCA; Jany. 1857.; H. Clark.; 57.50' and 'CYPHONIA HISPIDA.'.

***histrio* (*Oxygonia*)** Walker, 1858a : 71. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'G Bernel' and 'histrio Walk'.

hordeacea (Polyglypta) Butler, 1877a; : 209. LECTOTYPE ♀ with labels: 'Type' and 'Peru' and '68.4' and 'P. hordeacea; Butler Type'.

There is another female from the type-series in the collection.

horizontalis (Hybandoides) Distant, 1915b : 327. LECTOTYPE ♀ with labels: 'Type' and 'Sarawak; Museum.; 1914–253.' and 'Mt. Kinabalu.; 3.000 ft.; Sep. 1913' and 'Hybandoides; horizontalis; type Dist.'.

There are four other females and three males from the type-series in the collection.

horizontalis (Tricentrus) Distant, 1916a : 164. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Moulmein; L. Burma' and 'Tricentrus; horizontalis; type Dist.'.

horrescens (Smerdalea) Fowler, 1896e : 163. LECTOTYPE ♂ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Smerdalea; horrescens.; Fowler. TYPE.' and the B.C.A. label.

There are another male and a female from the type-series in the collection.

horridulus (Centrotus) Walker, 1851a : 605. Holotype ♀ with labels: 'Type' and 'Port; Natal; 49:29' and 'validicornis Stal.' and '17. CENTROTUS HORRIDULUS,'.

horvathi (Pogontypus) Distant, 1908g : 67. LECTOTYPE ♂ with labels: 'Yatiyantota,; Ceylon, 3–1902' and 'Distant Coll.; 1911–383.'.

The specimen previously bearing the 'Type' label and Distant's 'horvathi; type Dist.' label was not selected as lectotype as it was not from the published type locality. It is possible that these labels have been mis-placed.

humilior (Enchenopa) Walker, 1858a : 62. LECTOTYPE ♀ with labels: 'Type' and 'Venez' and 'Venezuela' and 'humilior Walk'.

humilis (Hoplophora) Walker, 1851a : 514. Holotype ♂ with labels: 'Type' and 'Gallia.' and '1933' and '18. HOPLOPHORA HUMILIS,'.

humilis (Membracis) Fowler, 1894b : 6. Holotype ♀ with labels: 'Type' and 'Atoyac,; Vera Cruz.; Schumann.' and 'Brit. Mus.; 1904–55.' and 'M. humilis. Fowler; TYPE' and the B.C.A. label.

hyalifascia (Gargara) Funkhouser, 1927b : 8. Holotype ♀ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Fort de Kock; (Sumatra) 920M; 1925; leg. E. Jacobson.' and 'HOLOTYPE; Gargara hyalifascia; W. D. Funkhouser ♀'.

ignidorsum (Enchenopa) Walker, 1858b : 124. Holotype ♂ with labels: 'Type' and 'Mexico' and 'Mex.; 56; 143' and 'ENCHENOPA IGNIDORSUM.'.

This specimen is badly damaged.

ignipes (Centrotus) Walker, 1851a : 616. LECTOTYPE ♀ with labels: 'Type' and 'Jamaica' and '47. CENTROTUS IGNIPES,'.

imitator (Centrotus) Kirby, 1891a : 167. LECTOTYPE ♀ with labels: 'Pundaloya; Ceylon.' and '43' and 'Ceylon.; Green Coll.; 90–115.'.

The specimen previously bearing the 'Type' label was of an MS species of Walker's. There is another female from the type-series in the collection.

impedita (Entylia) Walker, 1858b : 137. Holotype ♀ with labels: 'Type' and 'Canada; W; 56; 13' and 'ENTYLIA IMPEDITA.'.

inaequalis (Adippe)' Fowler, 1896b : 136. LECTOTYPE ♀ with labels: 'Type and 'Bugaba,; 8–1500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Adippe; inaequalis; Fowler. TYPE' and the B.C.A. label.

There are two other females and two specimens without abdomens from the type-series in the collection.

inaequalis (Cyrtolobus) Fowler, 1896c : 142. Holotype ♂ with labels: 'Type' and 'Xucumanatlan,; Guerrero,; 7000 ft.; July. H. H. Smith' and 'Brit. Mus.; 1904–55.' and 'Cyrtolobus; inaequalis. Fowler; TYPE.' and the B.C.A. label.

inaequalis (Entylia) Butler, 1877a : 211. LECTOTYPE ♀ with labels: 'Type' and 'Guatemala; 5000' and '75.28.' and 'E. inaequalis.; Butler Type.'.

There is a male from the type-series in the collection.

inaequalis (Ochropepla) Fowler, 1894c : 44. LECTOTYPE ♂ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Ochropepla; inaequalis; Fowler. TYPE' and the B.C.A. label.

There are another male and eight females from the type-series in the collection.

incerta (Darnis) Walker, 1858b : 149. Holotype ♀ with labels: 'Type' and 'Mex.; 56; 143' and 'DARNIS INCERTA.'.

incisa (Entylia) Walker, 1851a : 548. Holotype with labels: 'Type' and '38.' and '38.' and '9. ENTYLIA INCISA,'.

The abdomen is missing.

incongrua (Combophora) Walker, 1858c : 340. LECTOTYPE ♀ with labels: 'Type' and 'Tun-; antin; 57; 125' and 'COMBOPHORA INCONGRUA.'.

inconspicua (Adippe) Fowler, 1896b : 135. LECTOTYPE ♀ with labels: 'Type' and 'David,; Chiriqui.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Adippe; inconspicua; Fowler TYPE' and the B C.A. label.

One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot. There is another female from the type-series in the collection.

inconspicua (Aphetea) Fowler, 1895d : 95. LECTOTYPE ♀ with labels: '♀' and 'Cahabon,; Vera Paz.; Champion.' and 'Aphetea; inconspicua; Fowler. TYPE; ♀' and the B.C.A. label.

There is also a male from the type-series in the collection which previously bore the 'Type' label; it is not selected as lectotype as Fowler stated in his description that '. . . the male . . . may belong to a separate species. . .'.

inconspicua (Bolbonota) Fowler, 1894b : 18. LECTOTYPE ♂ with labels: 'Type' and 'Teapa,; Tabasco.; Feb. H. H. S.' and 'Brit. Mus.; 1904–55.' and 'Bolbonota; inconspicua Fowler; TYPE' and the B.C.A. label.

The tegmina are missing and the abdomen is glued separately. There are three other males from the type-series in the collection.

inconspicuous (Ischnocentrus) Buckton, 1903a : 255. Holotype ♀ with labels: 'Type' and 'Cachabé,; low C., xii. 96; (Rosenberg).' and 'Pogon; inconspicuum; γ.' and 'Ischnocentrus; inconspicuous; (type) Buckt.'.

incurvatum (Pogon) Buckton, 1903a : 248. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Pogon.; incurvatum; n.; Ceylon; type.'.

The posterior pronotal process is broken and the tegmina are damaged.

indecisa (Entylia) Walker, 1851a : 549. LECTOTYPE ♀ with labels: 'Type' and 'Trenton; Falls.' and '41.; 5.17.; 308' and 'E. Doubleday.; Trenton Falls,; New York.'.

There is another specimen from the type-series in the collection; its abdomen is missing.

indeterminata (Darnis) Walker, 1858b : 148. Holotype ♀ with labels: 'Type' and 'Santar; em; 53; 72.' and 'DARNIS INDETERMINATA.'.

indicans (Goddefroyinella) Distant, 1916d : 22. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Gayandah; Queensland' and 'Goddefroyinella; indicans; type Dist.'.

There are two other females and a male from the type-series in the collection.

indicans (Oxyrhachis) Walker, 1858b : 128. Holotype ♂ with labels: 'Type' and 'Ceylon; 54 38' and 'OXYRHACHIS INDICANS.'.

The posterior pronotal process is missing.

infixa (Darnis) Walker, 1858b : 149. Holotype ♀ with labels: 'Type' and 'Veneza.; 55.89.' and 'DARNIS INFIXA.'.

The posterior pronotal process and the left tegmen are damaged.

inflatus (Sphongophorus) Fowler, 1894c : 30. LECTOTYPE ♂ with labels: 'Type' and '♂' and 'S. Geronimo,; Guatemala.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Sphongophorus; (Lecythifera) inflatus; Fowler. ♂ TYPE' and the B.C.A. label.

There are three other males and two females from the type-series in the collection.

***insignis* (*Bolbonota*)** Fowler, 1894b : 17. LECTOTYPE ♀ with labels: 'Type' and 'Bugaba,; Panama.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Bolbonota; insignis. Fowler; TYPE' and the B.C.A. label.

There are seventeen other specimens from the type-series in the collection.

***insignis* (*Ceresa*)** Walker, 1858a : 67. LECTOTYPE ♀ with labels: 'Type' and 'insignis Walk'.

The abdomen is partially eaten away.

***insignis* (*Leptocentrus*)** Distant, 1908g : 32. Holotype ♂ with labels: 'Type' and '29' and 'Distant Coll.; 1911–383.' and 'Muching; Dec. 10; 1903' and 'Leptocentrus; insignis.; type Dist.'.

***insignis* (*Parapogon*)** Distant, 1916a : 153. LECTOTYPE ♀ with labels: 'Type' and 'Ceylon.; Nuwara.; Eliya.; 1911–301.' and 'Telingana; insignis; type Dist.'.

There are two other females from the type-series in the collection.

***insignis* (*Platybelus*)** Distant, 1916c : 326. Holotype ♀ with labels: 'Type' and 'Nyassa.; 77.103' and 'Platybelus; insignis; type Dist.'.

***insignis* (*Tragopa*)** Fowler, 1895c : 85. LECTOTYPE ♀ with labels: 'Type' and 'Bugaba,; 800–1,500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Tragopa; insignis; Fowler. TYPE' and the B.C.A. label.

There are another female and a male from the type-series in the collection.

***insolita* (*Stegaspis*)** Walker, 1858a : 109. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'insolita'.

The anterior pronotal horn is broken and the right tegmen lost. The generic name is mis-spelt in the description.

***insularis* (*Sertorius*)** Distant, 1916d : 26. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'New Brit' and 'Sertorius; insularis; type Dist.'.

There are three other females from the type-series in the collection.

***intectus* (*Dysyncritus*)** Fowler, 1895b : 81. LECTOTYPE ♀ with labels: 'Type' and 'Teapa,; Tabasco.; March. H. H. S.' and 'Brit. Mus.; 1904–55.' and 'Dysyncritus; intectus Fowler; TYPE.' and the B.C.A. label.

There is a male from the type-series in the collection.

***integra* (*Ceresa*)** Walker, 1858a : 67. LECTOTYPE ♂ with labels: 'Type' and '68.4' and 'integra Walk'.

The abdomen is partially eaten away and the pronotum is damaged.

***intermedia* (*Aspona*)** Fowler, 1894c : 51. Holotype ♀ with labels: 'Type' and 'Bugaba,; 800–1500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aspona; intermedia; Fowler. TYPE' and the B.C.A. label.

***intermedia* (*Physoplia*)** Walker, 1858a : 66. LECTOTYPE ♂ with labels: 'Type' and '91.; 118.' and 'intermedia Walk' and another label which is illegible.

***intermedia* (*Triquetra*)** Distant, 1881d : 223. LECTOTYPE ♀ with labels: 'Type' and 'de Savanna; à Bogota; Dr. O. Thieme 1877' and 'Distant Coll.; B.M. 1911–383.' and 'intermedia; Dist' and 'Triquetra; intermedia,; (type) Dist.'.

There is another female from the type-series in the collection.

***intermedius* (*Otinotoides*)** Distant, 1916d : 41. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Buckton; (Collection)' and 'Largs Bay; 19.2.84; Tepper; 10' and 'Centrotus; intermedia' and 'Otinotoides; intermedius; type Dist.'.

There are six other females and two specimens without abdomens from the type-series in the collection.

***interna* (*Aconophora*)** Walker, 1851a : 541. Holotype ♀ with labels: 'Type' and 'Brasil.' and '1878' and '19. ACONOPHORA INTERNA,'.

The posterior pronotal process is broken.

***interrupta* (*Polyglypta*)** Walker, 1851a : 545. Holotype ♂ with labels: 'Type' and 'Colum-; bia; 47; 25' and '14. POLYGLYPTA INTERRUPTA,'.

***invarius* (*Centrotus*)** Walker, 1851a : 621. Holotype ♂ with labels: 'Type' and '1897' and 'Chi' and '55. CENTROTUS INVARIUS,'.

The head is missing.

***irvinei* (*Kanada*)** Distant, 1908g : 75. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Ranchi; Irvine.' and 'Kanada; irvinei; type Dist'.

***isabellina* (*Trachytalis*)** Fowler, 1895e : 115. LECTOTYPE ♂ with labels: 'Type' and 'Chilpancingo,; Guerrero,; 4600 ft.; June. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Trachytalis; isabellina. Fowler; TYPE' and the B.C.A. label.

The right tegmen is lost. There are three other males and four females from the type-series in the collection.

***jacobsoni* (*Leptocentrus*)** Funkhouser, 1927b : 12. Holotype ♀ with labels: 'Sumatra.; Pres. by; E. Jacobson.' and 'Fort de Kock; (Sumatra) 920M.; 1926; leg. E. Jacobson.' and 'Brit. Mus.; 1926–401.' and 'HOLOTYPE ♀,; Leptocentrus Jacobsoni; W. D. Funkhouser'.

The allotype is also in the collection.

***jucundus* (*Centrotus*)** Walker, 1851a : 620. Holotype ♂ with labels: 'Type' and 'Jamaica; 45; 110' and '52. CENTROTUS JUCUNDUS,'.

***juncta* (*Membracis*)** Walker, 1858a : 59. LECTOTYPE ♀ with labels: 'Type' and 'Para' and 'juncta Walk'.

***kamaonensis* (*Tricentrus*)** Distant, 1916a : 163. Holotype ♀ with labels: 'Type' and 'Pusa Coll.; 1915–164.' and 'Bhimtal; Kamaon; 10–5–1912' and 'Tricentrus; Kamaonensis; type Dist.'.

***kandyiana* (*Parapogon*)** Distant, 1908g : 22. Holotype ♀ with labels: 'Type' and 'Kandy,; Ceylon, 6.02' and 'Kandyiana; type Dist'.

***kartabensis* (*Rhexia*)** Haviland, 1925a : 244. Holotype ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; June, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Rhexia; Kartabensis; Haviland'.

The pronotum is damaged.

***kempi* (*Hypsauchenia*)** Distant, 1916a : 148. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Assam; Cherrapungi; (S. W. Kemp)' and 'Hypsauchenia; kempi; type Dist'.

***kriegeli* (*Tricentrus*)** Funkhouser, 1932a : 118. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1933–360' and 'B.N. BORNEO.; Mt. Kinabalu,; Kenokok,; 3,300 ft.; 24th Apr. 1929.; H. M. Pendlebury; coll.; F.M.S. Museums.' and 'HOLOTYPE; Tricentrus kriegeli; W. D. Funkhouser'.

***laeta* (*Enchenopa*)** Walker, 1851a : 494. LECTOTYPE ♀ with labels: 'Type' and 'Brazil; 43; 86.' and '42. ENCHENOPA LAETA,'.

The posterior pronotal process is missing. There is another female from the type-series in the collection.

***lagosensis* (*Neoxiphistes*)** Distant, 1913 : 515 (Trans. Ent. Soc. Lond. vol. 46) LECTOTYPE ♀ with labels: 'Co-; type' and '50. Dec. 8. 1911.; 9 crowded on; same stem.; Lagos, 70m. E.; Forest, c. 1m. E. of; Oni. Wet S. c. mid; Mch. – Dec. 8. 1911.; W. A. Lamborn.' and 'CO-TYPE.; DISTANT.; Neoxiphistes; lagoensis'.

The posterior pronotal process is broken.

***lamborni* (*Oxyrhachis*)** Distant, 1916d : 19. Holotype ♂ with labels: 'Type' and 'S. Nigeria.; 27.1.14.; W. A. Lamborn.' and '191–505' and 'Oxyrhachis; lamborni; type Dist.'.

***lata* (*Aconophora*)** Walker, 1858a : 69. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'lata Walk'.

***lata* (*Hemiptycha*)** Walker, 1851a : 571. Holotype ♀ with labels: 'Type' and '45; 125' and '18. HEMIPTYCHA LATA,'.

***laticorne* (*Aconophora*)** Walker 1858b : 134. LECTOTYPE ♂ with labels: 'Type' and 'Mex.; 56; 143' and 'ACONOPHORA LATICORNE.'.

There are two other males from the type-series in the collection.

laticornis (Centruchoides) Fowler, 1896e : 162. LECTOTYPE ♀ with labels: 'Type' and '♀' and 'V. de Chiriqui; 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Centruchoides; ♀ laticornis Fowler; TYPE.' and the B.C.A. label.

The abdomen is glued separately. There are two other females and a male from the type-series in the collection.

latifrons (Horiola) Walker, 1851a : 588. Holotype ♂ with labels: 'Type' and 'Colombia' and 'Colum; bia; 47; 25' and '10. HORIOLA LATIFRONS,'.

The type was described erroneously as female. The left tegmen is lost and the posterior pronotal process is broken.

latifrons (Ictaranthe) Fowler, 1895b : 79. Holotype ♀ with labels: 'Type' and 'Bugaba,; 800–1500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Iktaranthe [sic]; latifrons Fowler.; TYPE.' and the B.C.A. label.

The specimen is badly damaged.

latilinea (Darnis) Walker, 1858b : 147. LECTOTYPE ♀ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; H. Clark.; 57–43.' and 'DARNIS LATILINEA.'.

There is another female from the type-series in the collection.

latimargo (Centrotus) Walker, 1857b : 163. LECTOTYPE ♀ with labels: 'Type' and 'SAR.' and 'Borneo; 57; 36' and 'CENTROTUS LATIMARGO.'.

latior (Darnis) Fowler, 1894c : 52. LECTOTYPE ♂ with labels: 'Type' and 'V. de Chiriqui, 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Darnis; latior Fowler.; TYPE' and the B.C.A. label.

There is a damaged female from the type-series in the collection.

latipennis (Centrotus) Walker, 1851a : 607. LECTOTYPE ♀ with labels: 'Type' and 'Brazil; 43; 86' and '20. CENTROTUS LATIPENNIS.'.

latipes (Aethalion) Walker, 1851b : 649. Holotype ♀ with labels: 'Type' and 'Colum; bia; 43; 64.' and '8. AETHALION LATIPES.'.

The left wing and tegmen are glued separately.

lativitta (Umbonia) Walker, 1851a : 520. Holotype ♀ with labels: 'Type' and 'Brazil; 48; 5.' and '15. UMBONIA LATIVITTA,'.

latus (Tricentrus) Funkhouser, 1927b : 5. Holotype ♀ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Gunung Singgalang; Sumatra's Westkust); 1800M. vii 1925; leg. E. Jacobson.' and 'HOLOTYPE; Tricentrus latus; ♀ W. D. Funkhouser'.

laxatus (Centrotus) Distant, 1916b : 155. Holotype ♀ with labels: 'Type' and 'Natal.; Durban.; J. P. Cregoe.; 1904–46.' and 'Centrotus; laxatus; type Dist.'.

lefroyi (Oxyrhachis) Distant, 1916a : 147. LECTOTYPE ♀ with labels: 'Type' and '79' and 'H. M. Lefroy' and 'Pusa Coll.; 1915–164.' and 'Oxyrhachis; lefroyi; type Dist.'.

There are two other females from the type-series in the collection.

lepida (Smilia) Walker, 1858b : 133. Holotype ♀ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; J. Gray.; 57 : 57.' and 'SMILIA LEPIDA'.

leucaspis (Centrotus) Walker, 1858b : 158. LECTOTYPE with labels: 'Type' and 'Centrotus leucaspis'.

The abdomen is missing.

leucotelus (Heteronotus) Walker, 1858b : 155. Holotype ♀ with labels: 'Type' and 'Ega; 57; 20' and 'HETERONOTUS LEUCOTELUS.'.

leucotelus (Heteronotus) Walker, 1858c : 339. Holotype ♀ with labels: 'Type' and 'Ega; 57; 125' and 'HETERONOTUS LEUCOTELUS' and 'H. parvinodis; Butler Type; nom. nov.'. [Butler, 1878a : 361].

lignicola (Oxyrhachis) Buckton, 1903a : 224. LECTOTYPE ♂ with labels: 'Type' and '757' and 'Ramisaram; S. India. 3.01' and 'Oxyrhachis; lignicola Buckt.; Ceylon.; Type'.

There are four other males and four females from the type-series in the collection.

limbatus (Centrotus) Walker, 1857b : 163. LECTOTYPE ♀ with labels: 'Type' and 'SAR' and 'Wallace' and 'limbatus Walk'.

lineifrons (Stictopelta) Fowler, 1895a : 58. LECTOTYPE ♀ with labels: 'Type' and 'Temax,; N. Yucatan.; Gaumer.' and 'Brit. Mus.; 1904–55.' and 'Stictopelta; lineifrons Fowler; TYPE' and the B.C.A. label.

There are another female and two males from the type-series in the collection.

lineola (Darnis) Walker, 1858b : 146. Holotype ♀ with labels: 'Type' and 'Mexico.' and 'Mexico; 53; 86' and 'DARNIS LINEOLA.'.

lineosa (Aconophora) Walker 1858b : 134. Holotype ♀ with labels: 'Type' and 'N; Amer' and 'ACONOPHORA LINEOSA.'.

The left tegmen is missing.

lineosa (Oxygonia) Walker, 1862a : 318. LECTOTYPE ♂ with labels: 'Type' and 'Rio' and 'Miss Pascoe; 96–41.' and 'Oxygonia; lineosa; type Walk'.

There is a female from the type-series in the collection.

longa (Enchenopa) Walker, 1851a : 486. Holotype ♀ with labels: 'Type' and 'Brazil.' and 'Brasil; 43; 88' and '28. ENCHENOPA LONGA,'.

The anterior pronotal process is broken and the head is displaced.

longa (Hemiptycha) Walker, 1851a : 570. Holotype ♀ with labels: 'Type' and '45; 125' and '17. HEMIPTYCHA LONGA,'.

Both wings are missing.

longicornis (Xiphistes) Distant, 1908h : 212. LECTOTYPE ♂ with labels: 'Co-; type' and '1906; 5353' and 'Distant Coll.; 1911–383.' and 'S. E. RHODESIA,; Melsetter, Gaza-; land. about 3600; ft. Mt. Chirinda,; (in the forest).; Capt. 3–5.x.05; and pres. 1906 by; Guy Marshall.' and 'longicornis; Dist.'.

longispinus (Leptocentrus) Distant, 1908g : 31. Holotype ♀ with labels: 'Type' and 'Burm' and '68.4' and 'Leptocentrus; longispinus; type Dist.'.

lucillodes (Metheisa) Fowler, 1896b : 132. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and '9' and 'Metheisa; lucillodes; Fowler. TYPE.' and the B.C.A. label.

The left tegmen is missing. There is another female and four males from the type-series in the collection.

ludicrus (Sphongophorus) Walker, 1858a : 63. LECTOTYPE ♀ with labels: 'Type' and 'Para' and '91; 118' and 'ludicrus Walk'.

The anterior pronotal process is broken. The generic name is misspelt in the description.

lugubrina var. ***parallela (Micrutalis)*** Fowler, 1895e : 120. LECTOTYPE ♂ with labels: 'Type' and 'Quezaltenango,; 7800 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Micrutalis; lugubrina. Stal; v. parallela; Fowler. TYPE' and the B.C.A. label.

Glued to the same card as a female, the lectotype is indicated by an adjacent red ink spot.

lutea (Thelia) Walker, 1851a : 559. LECTOTYPE ♂ with labels: 'Type' and 'N. Amer' and 'Ent. Club.; 44–12.' and '13. THELIA LUTEA,'.

There are another male and a female from the type-series in the collection; both this male and the type have the genitalia mounted on cover slips.

luteinervis (Leptocentrus) Funkhouser, 1936c : 245. Holotype ♀ with labels: 'Type' and '275' and 'Brit. Mus.; 1936–222.' and 'On Michelia; champaca.' and 'Bagdogra Range; Kurseong, Bengal; N. C. Chatterjee.; 27.vi.1935' and 'HOLOTYPE; Leptocentrus luteinervis; W. D. Funkhouser.'.

luteus (Sphaerocentrus) Buckton, 1903a : 244. Holotype ♂ with labels: 'Type' and '2114; 21' and 'Sandy Creek; Hakersanhans; 20.10.88. Tepper' and 'Sphaerocentrus in monogr.; Campylocentrus; luteus Buckt type'.

mabirensis (Hamma) China, 1923b : 463. LECTOTYPE ♀ with labels: 'Type; H.T.' and 'Mabira; Uganda; R. A. Dummer' and '25.x.1922.; Brit. Mus.; 1923–1.' and 'Hamma; mabirensis China; Type'.

There is another female from the type-series in the collection: both specimens are badly damaged.

maculata (Adippe) Distant, 1879a : 11. Holotype ♀ with labels: 'Type' and 'Irazu,; 6–7000 ft.; H. Rogers.' and 'Maculata; Dist; (type)' and 'Adippe; maculata; Distant. TYPE' and a B.C.A. label.

maculata (Gargara) Funkhouser, 1936c : 249. Holotype ♀ with labels: 'Type' and '232' and 'North; Andaman.; C. F. C. Beeson; 11.3.1930' and 'HOLOTYPE; Gargara maculata; W. D. Funkhouser'.

The type is erroneously described as male.

maculipennis (Centrotoscelus) Funkhouser, 1933a : 579. Holotype ♂ with labels: 'Type' and 'MALAY PENINS:; PAHANG, F.M.S.; Fraser's Hill 4000 ft.; Feb: 1st 1929.; H. M. Pendlebury; F.M.S.; Museums.' and 'Ex F.M.S.; Museum; B.M. 1955–354' and 'Centrotoscelus; maculipennis; Funkhouser; HOLOTYPE'.

The allotype and two other males from the type-series are in the collection.

maculosa (Parayasa) Distant, 1916a : 177. LECTOTYPE ♀ with labels: 'Type' and 'Nandidrug,; S. India.; T. V. Campbell.' and 'S. India.; E. A. Butler.; 1915–60.' and '107' and 'Parayasa; maculosa; type Dist.'.

There is another female from the type-series in the collection.

maculosa (Pterygia) Walker, 1858a : 65. LECTOTYPE ♀ with labels: 'Type' and 'Amaz' and 'maculosa Walk'.

The pronotum is damaged and the abdomen is glued separately.

magna (Cryptaspidia) Funkhouser, 1927h : 254. Holotype ♀ with labels: 'MALAY PENIN:; Selangor,; Bukit Kutu; 3500 ft.; April 19th 1926:; H. M. Pendlebury.; EX COLL: F.M.S.; MUSEUMS.' and '154' and 'Brit. Mus.; 1930–324.' and 'HOLOTYPE; Cryptaspidia magna; W. D. Funkhouser'.

major (Phacusa) Fowler, 1895d : 111. LECTOTYPE ♂ with labels: 'Type' and 'V. de Agua,; 85–10500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Phacusa; major. Fowler; TYPE.' and the B.C.A. label.

Glued to the same card as a female, the lectotype is indicated by an adjacent red ink spot. There are two other females from the type-series in the collection.

major (Sextius) Distant, 1916d : 34. LECTOTYPE ♀ with labels: 'Type' and 'Peak-Downs.' and 'Distant Coll.; 1911–383.' and 'Sextius; major; type Dist.'.

There are three other females and a specimen without an abdomen from the type-series in the collection also.

majuscula (Gargara) Distant, 1908g : 61. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Mungphu.' and 'Gargara; majuscula; type Dist.'.

malleator (Centrotus) Walker, 1851a : 612. Holotype ♂ with labels: 'Type' and 'Java; 46; 108' and '40. CENTROTUS MALLEATOR,'.

The right tegmen is missing

malleifera (Micrutalis) Fowler, 1895e : 118. Holotype with labels: 'Type' and 'Orizaba.; H. S. & F. D. G.; Dec. 1887.' and 'Brit. Mus.; 1904–55.' and 'Micrutalis; malleifera; Fowler. TYPE' and the B.C.A. label.

The type is lost: only the pin and labels remain. There are no other specimens from the type-series in the collection.

malleolus (Centrotus) Walker, 1851a : 614. Holotype ♂ with labels: 'Type' and 'Java; 50; 44' and '42. CENTROTUS MALLEOLUS'.

malleus (Centrotus) Walker, 1851a : 613. Holotype ♂ with labels: 'Type' and 'Ceylon; 50; 56.' and '41. CENTROTUS MALLEUS.'.

The head is damaged by the pin.

mangiferana (Oxyrhachis) Distant, 1916a : 147. LECTOTYPE ♀ with labels: 'Type' and 'United Prov.,; Forest Dept.,; Dehra Dun.; Dr. A. W. Imms.; 1915–228.' and '242' and ' For

Zool Coll; Surajbagh; Dehra Dun; 1–4–1912; on mango; leaf. Coll. by.; office Collecter.' and 'Oxyrachis [sic]; mangiferana; type Dist.'.

There is another female from the type-series in the collection, its pronotum is damaged.

manni (Hypsauchenia) Distant, 1916a : 149. Holotype ♂ with labels: 'Type' and 'Pussumbing; Darjeeling; 4700 ft 26/11/06.' and 'Hypsauchenia; manni; type Dist.'.

margherita (Parayasa) Distant, 1916a : 180. Holotype ♀ with labels: 'Type' and 'Margherita; 9095' and 'Distant Coll.; 1911–383.' and 'Parayasa; margherita; type Dist.' and 'Gargara; margherita; (DIST.); det. CAPENER'.

marginalis (Membracis) Walker, 1851a : 479. Holotype ♂ with labels: 'Type' and 'Para; 48; 133.' and '29. MEMBRACIS MARGINALIS,'.

Erroneously described as female; the head is missing.

marginata (Aconophora) Walker, 1851a : 540. Holotype with labels: 'Type' and 'Mexico; 46; 33' and '16. ACONOPHORA MARGINATA,'.

The abdomen is missing.

marshalli (Centrotus) Distant, 1916b : 154. LECTOTYPE ♂ with labels: 'Type' and '1903; 2464' and 'SALISBURY,; 5000 feet,; Mashonaland.; Capt. Apr. 1903; & pres. 1903 by; Guy Marshall.' and 'Centrotus; marshalli; type Dist.'.

There are also two females from the type-series in the collection.

matangensis (Centrotus) Distant, 1916c : 323. LECTOTYPE ♂ with labels: 'Type' and '30' and 'Distant Coll.; 1911–383.' and 'Matang: Jan.; 199' and 'Centrotus; matangensis; type Dist.'.

There is a female from the type-series in the collection.

media (Physoplia) Walker, 1851a : 516. LECTOTYPE ♂ with labels: 'Type' and 'mexico; 48; 11' and '2. PHYSOPLIA MEDIA,'.

There are two other males from the type-series in the collection.

melaleuca (Enchenopa) Walker, 1858a : 59. LECTOTYPE ♀ with labels: 'Type' and 'Mex' and '68.4' and 'melaleuca Walk'.

melanocephala (Scaphula) Fowler 1895c : 83. Holotype ♀ with labels: 'Type' and '26' and 'Bugaba,; Panama.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Scaphula; melanocephala.; Fowler. TYPE.' and the B.C.A. label.

mephistopheles (Leptocentrus) Buckton, 1903a : 235. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'SIKKIM; 2800; Aug. 1895.; J. G. PILCHER,' and 'Centrotus; substitutus; W.' and 'Leptocentrus; mephistopheles; type Buckt.'.

It is badly damaged.

merinjakensis (Eligius) Distant, 1916b : 153. LECTOTYPE ♀ with labels: 'Type' and 'Sarawak; Museum.; 1914–415.' and 'Mt. Merinjak; Alt. 600 ft; May 18 1914.' and 'Eligius; merinjakensis; type Dist.'.

There are another female and a male from the type-series in the collection.

midas (Otinotus) Buckton, 1903a : 233. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'PERAK, DOHERTY.' and 'Centrotus; midas; bu'.

mimica (Membracis) Walker, 1858b : 123. LECTOTYPE ♂ with labels: 'Type' and 'Decr. 1856.; J. Gray.; 57.57' and 'MEMBRACIS MIMICA.'.

There is another male from the type-series in the collection.

mimicus (Otinotus) Distant, 1916a : 159. LECTOTYPE ♀ with labels: 'Type' and 'L.; 4.15.' and '416' and 'Nilgiri Hills; S. India; T. V. Campbell' and 'Otinotus; mimicus; type Dist.'.

There are four other females and a male from the type-series in the collection.

minamen (Enchenopa) Buckton, 1901a : 51. LECTOTYPE ♂ with labels: 'Type' and 'Cachabé; low c., XI. 96.; (Rosenberg).' and 'Enchenopa minamen'.

There are four females from the type-series in the collection. All five specimens have the anterior pronotal horn missing.

minor (Bilimekia) Fowler, 1895f : 128. LECTOTYPE ♂ with labels: 'Type' and 'Bilimek; Mexico 83.' and '465' and 'Brit. Mus.; 1904–55.' and the B.C.A. label.

minor (Hypamastris) Fowler, 1895d : 93. LECTOTYPE ♂ with labels: 'Type; H.T.' and 'Teapa,; Tabasco.; H. H. S.' and 'Brit. Mus.; 1904–55.' and 'Hypamastris; minor. Fowler; TYPE.' and the B.C.A. label.

The locality label is duplicated. One of two males glued to the same card, the lectotype is indicated by an adjacent red ink spot. There are two other males from the type-series in the collection.

minor (Philya) Fowler, 1894b : 22. LECTOTYPE ♂ with labels: 'Type' and 'Cerro Zunil,; 4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Philya; minor Fowler.; TYPE' and the B.C.A. label.

Glued to the same card as a female, the lectotype is indicated by an adjacent red ink spot. There are two other males from the type-series in the collection.

minor (Tropidocyta) Buckton, 1901a : 53. LECTOTYPE ♀ with labels: 'Type' and 'B; 227' and 'Miers Coll.' and 'Tropidocyta; minor'.

The specimen is completely shattered and the fragments glued separately to a card.

minusculus (Centrotus) Walker, 1870a : 191. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Sul' and 'Sula; Wallace' and 'minusculu'.

minuticornis (Otinotoides) Funkhouser, 1935d : 431. Holotype ♀ with labels: 'Type; H.T.' and 'SOLOMON IS.; Su'u; Mala; R. A. Lever; 24.v.1934; 2992' and 'Pres. by; Imp. Inst. Ent.; B.M. 1935–224.' and 'Otinotoides; minuticornis; HOLOTYPE; W. D. Funkhouser'.

The allotype and twenty-four other paratypes are in the collection also.

minutus (Micrutalis) Buckton, 1902a : 178. LECTOTYPE ♀ with labels: 'Type' and 'Cachabé,; low c., I. 97.; (Rosenberg).' and 'Micrutalis; minutus; m.'.

mira (Entylia) Butler, 1877a : 211. Holotype ♀ with labels: 'Type' and 'Mexico' and 'Mex' and '68.4' and 'E. mira; Butler Type'.

The tip of the anterior pronotal process is broken.

mixta var. ***nandidrugana (Gargara)*** Distant, 1916a : 171. LECTOTYPE ♀ with labels: 'Type' and '105 N. Dg; 10.13' and 'S. India.; E. A. Butler.; 1915–60.' and 'Nandidrug,; S. India.; T. V. Campbell.' and 'Gargara; mixta Buckt.; var. nandidrugana; Dist.'.

There is another female from the type-series in the collection.

mixtus (Maerops) Buckton, 1903a : 257. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and '522' and 'Balangoda; Ceylon. I. 1901' and 'bs' and 'Bachybelus; mixtus; type'.

There is another female from the type-series in the collection.

modesta (Parayasa) Distant, 1916a : 181. Holotype ♂ with labels: 'Type' and 'Nilgiri Hills; S. India; T. V. Campbell' and '476' and 'Parayasa; modesta; type Dist.'.

molaris (Telamona) Butler, 1877a : 222. Holotype ♂ with labels: 'Type' and 'Saskat; chewan; 60; 57.' and 'T. molaris; Butler Type'.

monstrifer (Centrotus) Walker, 1858a : 80. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Hunt R.' and 'monstrifer Walk'.

The abdomen is glued separately.

montifer (Centrotus) Walker, 1851a : 620. Holotype ♀ with labels: 'Type' and 'Hong; Kong; 48; 60' and '53. CENTROTUS MONTIFER,'.

mounseyi (Ibiceps) Distant, 1916b : 150. LECTOTYPE ♀ with labels: 'Type' and '643.' and 'Philippine Is.; J. J. Mounsey.; 1912–181.' and 'Ibiceps; mounseyi: type Dist.'.

There is another female from the type-series in the collection.

muiri (Centrotusoides) Distant, 1916d : 30. Holotype ♀ with labels: 'Type' and 'Sharp Coll; 1905–313.' and 'Durban.; F. Muir. 1902.' and '9' and 'Centrotusoides; muiri; type Dist.'.

There are five apical cells in the tegmina, not four as stated in the description.

multiformis (Umbonia) Walker, 1858b : 129. LECTOTYPE ♀ with labels: 'Type' and 'mex.; 56; 143' and 'UMBONIA MULTIFORMIS.'.

munda (Parmula) Walker, 1858b : 152. LECTOTYPE ♀ with labels: 'Type' and 'Mex; 56; 143' and 'PARMULA MUNDA.'.

munda (Poppea) Fowler, 1895d : 101. LECTOTYPE ♂ with labels: 'Type' and 'Caldera,; 1200 ft.; Champion.' and 'Poppaea [sic]; munda Fowler; TYPE' and the B.C.A. label.

Glued to the same card as a female, the lectotype is indicated by an adjacent red ink spot.

mus (Ophiderma) Fowler, 1896c : 143. Holotype ♀ with labels: 'Type' and 'Quiche Mts.,; 7–9000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Ophiderma; n.s.' and 'Ophiderma; mus. Fowler.; TYPE.' and the B.C.A. label.

mutilus (Tricentrus) Distant, 1916a : 168. Holotype ♀ with labels: 'Type' and 'Maymyo V. 10; H. L. Andrewes' and 'Ind. Mus.' and 'Tricentrus; mutilus; type Dist.'.

myittae (Gargara) Distant, 1908g : 64. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Gargara; myittae; type Dist.'.

There is another female from the type-series in the collection.

naturalis (Tshaka) Distant, 1908h : 214. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Lydenburg Distr.; (Krantz)' and 'Tshaka; naturalis; type Dist.' and 'Tricoceps; quadripunctatus; STAL.; det. CAPENER 1963'.

There are five apical cells in the tegmina, not four as stated in the description.

nectaris (Centrotus) Buckton, 1903a : 246. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and '479' and 'da' and 'Centrotus; nectaris; Green; type.'.

There are two other females and three males from the type-series in the collection.

neglecta (Tropidocyta) Haviland, 1925a : 237. Holotype ♂ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; August, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Tropidocyta; neglecta; Haviland'.

Erroneously stated in the description as being female.

neuter (Polocentrus) Buckton, 1903a : 254. Holotype ♀ with labels: 'Type' and 'Madras' and 'Polocentrus; neuter Buckt; type...'.

The last word of the above label is illegible. The posterior pronotal process is broken and the legs are missing.

nigerrima (Hypsoprora) Fowler, 1894c : 25. Holotype ♂ with labels: 'Type' and 'El Zumbador,; 2500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hypsoprora; nigerrima ♂.; Fowler. TYPE' and the B.C.A. label.

nigricornis (Aconophora) Fowler, 1895a : 64. LECTOTYPE ♀ with labels: 'Type' and 'S. Geronimo,; Guatemala.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; nigricornis; Fowler. TYPE' and the B.C.A. label.

There are two other females from the type-series in the collection.

nigricornis (Ceresa) Fowler, 1895d : 104. LECTOTYPE ♀ with labels: 'Type' and '23' and 'Teapa,; Tabasco.; March. H. H. S.' and 'Brit. Mus.; 1904–55.' and 'Ceresa; nigricornis; Fowler. TYPE' and the B.C.A. label.

There is another female from the type-series in the collection.

nigrifrons (Stictopelta) Fowler, 1895a : 58. LECTOTYPE ♂ with labels: 'Type' and 'Temax,; N. Yucatan.; Gaumer.' and 'Brit. Mus.; 1904–55.' and 'Stictopelta; nigrifrons Fowler: TYPE' and the B.C.A. label.

There are two other males from the type-series in the collection.

nigrinervis (Acutalis) Fowler, 1895e : 114. LECTOTYPE ♂ with labels: 'Type' and 'Orizaba.; H. S. & F. D. G.; Dec. 1887.' and 'Brit. Mus.; 1904–55.' and 'Acutalis; nigrinervis. Fowler; TYPE' and the B.C.A. label.

One of two males glued to the same card, the lectotype is indicated by an adjacent red ink spot. There are seven other males and a female from the type-series in the collection.

nigris (Emphusis) Funkhouser, 1939b : 377. Holotype ♂ with labels: 'Type' and 'Ex F.M.S.; Museum.; B.M. 1955–354.' and 'MALAYA; PERAK F.M.S.; Larut Hills.; 5.00–1000 ft.;

23.6.1938; H. M. Pendlebury.; F.M.S.; Museums Coll.,' and 'HOLOTYPE; Emphusis nigris; W. D. Funkhouser'.

nigris (Leptobelus) Funkhouser, 1929a : 473. Holotype ♂ with labels: 'Brit. Mus.; 1930–324.' and 'N. BORNEO.; BETTOTAN,; NR. SANDAKAN.; Aug: 23rd 1927.; C. B. K. & H. M. H.; F.M.S.; Museums.' and 'HOLOTYPE; Leptobelus nigris; W. D. Funkhouser'.

nigrivittata (Aconophora) Walker, 1851a : 539. LECTOTYPE ♀ with labels: 'Type' and '39; 7.17.; 972.' and '14. ACONOPHORA NIGRIVITTATA,'.

The pronotum is damaged and the abdomen is mounted separately. There is another female from the type-series in the collection.

nigroapicalis (Tricentrus) Funkhouser, 1927b : 3. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1924–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Fort de Kock; (Sumatra) 920M.; 1924; leg. E. Jacobson.' and 'HOLOTYPE; Tricentrus nigroapicalis; ♀ W. D. Funkhouser'.

nigrocuprea (Enchenopa) Walker, 1858a : 60. LECTOTYPE with labels: 'Type' and 'Rio' and '68.4' and 'Rio' and 'nigrocuprea Walk'.

The abdomen is missing and the tip of the anterior pronotal process is broken.

nigromaculata (Gargara) Funkhouser, 1927b : 10. Holotype ♀ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by E. Jacobson.' and 'Fort de Kock; (Sumatra) 920M.; 1925; leg. E. Jacobson.' and 'HOLOTYPE ♀; Gargara nigromaculata; W. D. Funkhouser'.

The allotype is also in the collection.

nigropictus (Oxyrhachis) Distant, 1916d : 20. Holotype with labels: 'Type' and '1912–193' and 'Brit. E. Africa.; Valley of; Upper Nzoia R.; N. Kavirondo.' and '5,100–5,400 ft.; June 5–7, 1911.; S. A. Neave.' and 'Oxyrhachis; nigropictus; type, Dist.'.

The abdomen is missing and the posterior pronotal process is broken and glued separately.

nigrorufa (Hemiptycha) Walker, 1858b : 143. Holotype ♂ with labels: 'Type' and 'Mexico; 53; 86' and 'HEMIPTYCHA NIGRO-RUFA.'.

nigrorufus (Otinotus) Distant, 1916b : 153. LECTOTYPE ♀ with labels: 'Type' and '1912–193' and 'Uganda Prot.; near Masindi.; 3,500 ft.; 15–19 Dec. 1911.; S. A. Neave.' and 'Otinotus; nigrorufa; type Dist.'.

There are seven other females and two specimens without abdomens from the type-series in the collection.

nigrostrigata (Microschema) Buckton, 1901a : 92. LECTOTYPE ♀ with labels: 'Type' and 'Columbia; Quito [sic]' and 'Triquetra; nigrostrigata'.

nigrovittata (Ceresa) Fowler, 1895d : 104. LECTOTYPE ♀ with labels: 'Type' and 'Sabo,; Vera Paz.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Ceresa; nigrovittata; Fowler. TYPE' and the B.C.A. label.

There are three males and another female from the type-series in the collection.

nilgiriensis (Parayasa) Distant, 1916a : 180. LECTOTYPE ♂ with labels: 'Type' and 'Nilgiri Hills; S. India; T. V. Campbell' and 'S. India.; E. A. Butler.; 1915–60.' and 'Parayasa; nilgiriensis; type Dist.'.

One of two males glued to the same card, the lectotype is indicated by an adjacent red ink spot. There are six other males from the type-series in the collection.

nitida (Aconophora) Fowler, 1895a : 66. LECTOTYPE ♀ with labels: 'Type' and '♀' and 'Bugaba,; 800–1,500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'A. nitida.; Fowler. TYPE' and the B.C.A. label.

There are two other females and a male from the type-series in the collection.

nitida (Chelyoidea) Buckton, 1902a : 156. LECTOTYPE ♂ with labels: 'Type' and 'Amazons; C.; b. 92' and 'TRAGOPA; nitida' and 'A single spec. from St Pauls; Amazons, in the B.M. was; placed by Butler a T. aenea?; Fairm.'.

The legs are missing.

nitida (Leioscyta) Fowler, 1894b : 14. LECTOTYPE ♀ with labels: 'Type' and 'V. de

Chiriqui, 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Leioscyta; nitida. Fowler; TYPE' and the B.C.A. label.

There is another female from the type-series in the collection.

nitidalis (Ceresa) Buckton, 1902a : 173. LECTOTYPE ♀ with labels: 'Type' and 'Heine' and 'C. nitidalis; 137'.

The specimen is teneral.

nitidus (Tricentrus) Funkhouser, 1927b : 2. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Fort de Kock; (Sumatra) 920M.; 1926; leg. E. Jacobson' and 'HOLOTYPE; Tricentrus nitidus; ♀ W. D. Funkhouser'.

The allotype is also in the collection.

nivalis (Acanthuchus) Distant, 1916d : 28. LECTOTYPE ♀ with labels: 'Type' and '111.' and 'Distant Coll.; 1911–383.' and 'Brisbane:; H. Hacker; 3/10/12' and 'Acanthusus [sic]; nivalis; type Dist.'.

There is a male from the type-series in the collection.

niveiplaga (Centrotus) Walker, 1858b : 160. LECTOTYPE ♀ with labels: 'Type' and 'Mex.; 56; 143.' and 'Centrotus niveiplaga'.

nivis (Tricentrus) Funkhouser, 1932a : 119. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1933–360.' and 'B. N. BORNEO.; Mt. Kinabalu,; Lumu Lumu,; 5.500 ft.; 7:4:1929.; H. M. Pendlebury; coll.; F.M.S. Museums.' and 'HOLOTYPE; Tricentrus nivis; W. D. Funkhouser'.

The posterior pronotal process is broken. There is a female paratype in the collection.

nodicornis (Centrotus) Germar, 1835a : 257. Holotype with labels: 'Type' and 'C. G. H; 42 77.' and '1282 "nodicornis. G.'.

The head, pronotum, abdomen and tegmina are missing.

nodipennis (Gargara) Funkhouser, 1927b : 9. Holotype ♀ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Gunung Singgalang; (Sumatra's Westkust); 1800M. vii 1925; leg. E. Jacobson.' and 'Gargara; nodipennis; HOLOTYPE ♀; W. D. Funkhouser'.

nodosus (Daunus) Buckton, 1903a : 226. Holotype with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Grahamstown; Nov. 91' and 'Oxyrhachis' and '3' and 'Daunus; nodosus; type Buckt.'.

The abdomen, wings, tegmina and posterior pronotal process are missing.

nominatus (Promitor) Distant, 1915c : 495. LECTOTYPE with labels: 'Type' and 'Pt; Natal; 60; 97' and 'Promitor; nominatus; type Dist.'.

The abdomen is missing. There is a female from the type-series in the collection.

notandus (Ophicentrus) Fowler, 1896d : 156. Holotype ♀ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Ophicentrus; notandus. Fowler; TYPE.' and the B.C.A. label.

The abdomen is glued separately.

notata (Thelia) Walker, 1858a : 72. Holotype with labels: 'Type' and '–?' and 'notata Walk'.

The abdomen and tegmina are missing.

notatipennis (Micrutalis) Fowler, 1895e : 119. Holotype ♂ with labels: 'Type' and 'Chilpancingo, ; Guerrero, 4600 ft.; June. H. H. Smith.' and '25' and 'Brit. Mus.; 1904–55.' and notatipennis Fowler.; TYPE'.

The right wing and the tegmina are missing.

notatus (Ebhul) Funkhouser, 1927b : 17. Holotype ♀ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Gunung Singgalang; (Sumatra's Westkust); 1800M. 1925; leg. E. Jacobson.' and 'HOLOTYPE ♀; Ebhul notatus; W. D. Funkhouser'.

nubifascia (Centrotus) Walker, 1870a : 191. LECTOTYPE ♀ with labels: 'Type' and 'N.' and '68.4' and 'N. Gui; Wallace' and 'nubifascia'.

nuwarana (Machaerotypus) Distant, 1916a : 174. Holotype ♀ with labels: 'Type' and 'Ceylon.; Nuwara,; Eliya.; 1911–301.' and 'Machaerotypus; nuwarana; type Dist.'.

nyasana (Dacaratha) Distant, 1916c : 319. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Nyassa; Cotterell.' and 'Dacaratha; nyasana; type Dist.'.

obesum (Tauriona) Buckton, 1903a : 259. LECTOTYPE ♀ with labels: 'Type' and 'Paramba,; 3500; III. 97.; dry season.; (Rosenberg).' and 'Taurion [sic]; obesum; m.; K.'

The tegmina are damaged.

obliqua (Thelia) Walker, 1858a : 73. LECTOTYPE ♂ with labels: 'Type' and 'Mex; gon' and 'obliqua'.

The head, abdomen, thorax, etc. are glued separately to a card.

obliquus (Centrotus) Walker, 1858a : 79. LECTOTYPE ♂ with labels: 'Type' and '68.4' and 'Ind' and 'obliquus Walk'.

The genitalia are in a glass tube beneath the specimen.

obortus (Leptocentrus) Distant, 1916a : 154. Holotype ♂ with labels: 'Type' and 'Burma; Moulmein' and 'Distant Coll.; 1911–383.' and 'Leptocentrus; obortus; type Dist.'.

The head is missing.

obortus (Tshaka) Distant, 1916d : 42. LECTOTYPE ♀ with labels: 'Type' and 'Ac. –P; 548' and '1916–81' and 'Pretoria,; Transvaal.; Jan. 26. 1916' and 'Tshaka; obortus; type Dist.'.

There are five other females and a male from the type-series in the collection.

obscura (Umbonia) Walker, 1851a : 517. LECTOTYPE ♀ with labels: 'Type' and '34.a.' and '3. UMBONIA OBSCURA,'.

There is another female from the type-series in the collection.

obscurus (Coccosterphus) Distant, 1908g : 73. LECTOTYPE ♂ with labels: 'Type' and 'Peradeniya,; Ceylon, 1–03' and 'Distant Coll; 1911–383.' and 'Coccosterphus; obscurus; type Dist.'.

There are three other females and a male from the type-series in the collection.

obstans (Centrotus) Walker, 1858b : 162. Holotype ♀ with labels: 'Type' and 'VDL; 51; 58' and 'CENTROTUS OBSTANS.'.

obtusa (Aconophora) Walker, 1851a : 542. Holotype ♂ with labels: 'Type' and '1882' and '20. ACONOPHORA OBTUSA,'.

The head is missing.

occulta (Tragopa) Haviland, 1925a : 248. Holotype ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; July, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Tragopa; occulta,; Haviland.'.

ocellata (Adippe) Buckton, 1903a : 188. LECTOTYPE ♀ with labels: 'Type' and 'Rio Dagua; Colombia' and 'Adippe; ocellata'.

There are two other females and three males from the type-series in the collection.

oneratus (Centrotus) Walker, 1858a : 78. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Ind' and 'oneratus Walk'.

oppugnans (Centrotus) Walker, 1858b : 160. Holotype ♂ with labels: 'Type' and 'Mex.; 56; 143.' and 'CENTROTUS OPPUGNANS.'.

The head is missing.

oppugnans (Triquetra) Walker, 1858b : 131. Holotype with labels: 'Type' and 'Veneza.; 55.89.' and 'TRIQUETRA OPPUGNANS.'.

The abdomen is missing.

orcus (Centrotus) Buckton, 1903a : 247. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Centrotus; type orcus Buckt.' and 'Centrotus; orcus; philippines; G. N. [?]'.

The last part of the above label is illegible. The right tegmen is missing. The tegmina have two discoidal cells, not three as stated.

orizabae (Umbonia) Fowler, 1894c : 37. LECTOTYPE ♂ with labels: 'Type' and '♂' and 'Orizaba.; H. S. & F. D. G.; Dec. 1887.' and 'Brit. Mus; 1904–55.' and 'Umbonia; orizabae ♂; Fowler. TYPE.' and the B.C.A. label.

There are five other males and five females from the type-series in the collection.

ornanda (Telingana) Distant, 1916a : 150. Holotype ♀ with labels: 'Type' and 'N.N.; 5.14.; 187.' and '187' and 'S. India.; E. A. Butler.; 1915–60.' and 'Kodai Kanal.; S. India.; T. V. Campbell.' and 'Telingana; ornanda; type Dist.'.

ornatum (Pedalion) Buckton, 1903a : 252. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Pedalion; ornatum ; camaroons [sic]; type'.
There is another male from the type-series in the collection.

ortus (Centrotypus) Distant, 1908g : 35. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Trevm; Sept.; 1889.' and 'Centrotypus; ortus; type Dist.'.
The head is missing.

pactolus (Otinotus) Buckton, 1903a : 233. LECTOTYPE with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Perak; (Doherty)' and 'C pactolus; bw'.
The abdomen is lost. There are two other specimens without abdomens and a female from the type-series in the collection.

pallens (Micrutalis) Fowler, 1895e : 118. LECTOTYPE ♀ with labels: 'Type' and 'Teapa,; Tabasco.; H. H. S.; Teapa,; Tabasco.; H. H. S.' and 'Brit. Mus.; 1904–55.' and 'Brit. Mus.; 1904–55.' and 'Micrutalis; pallens Fowler; TYPE.' and the B.C.A. label.
One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot. There is a male also and a specimen without an abdomen from the type-series in the collection.

pallescens (Machaerotypus) Distant, 1916a : 173. LECTOTYPE ♀ with labels: 'Type' and 'Ceylon.; Nuwara,; Eliya.; 1911–301.' and 'Machaerotypus; pallescens; type Dist.'.
There is another female from the type-series in the collection.

pallescens (Otinotus) Distant, 1908g : 41. LECTOTYPE ♀ with labels: 'Type' and 'Bombay.; Dixon.' and 'Distant Coll.; 1911–383.' and 'Otinotus; pallescens; type Dist.'.
There are four other females and a male from the type-series in the collection.

pallidipennis (Azinia) Walker, 1858a : 63. LECTOTYPE ♀ with labels: 'Type' and 'China' and 'pallidipennis Walk'.
The posterior pronotal process is broken.

pallidus (Centrotus) Walker, 1851a : 625. Holotype ♀ with labels: 'Type' and '1914' and '13' and '62. CENTROTUS PALLIDUS,'.
The posterior pronotal process is broken.

pallidus (Daunus) Buckton, 1903a : 227. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Daunus; pallidus; type Buckt.' and 'Centruchoides; pallidus. m.'.
The abdomen is missing and the genitalia are mounted beneath the specimen.

pallipes (Centrotus) Walker, 1870a : 185. LECTOTYPE ♂ with labels: 'Type' and 'M.' and 'Wallace' and 'pallipes'.

pallipes (Otinotus) Distant, 1908g : 40. LECTOTYPE ♀ with labels: 'Type' and 'Karen Hills; (Doherty)' and 'Distant Coll.; 1911–383.' and 'Otinotus; pallipes; type Dist.'.
There are three other females and two males from the type-series in the collection.

paludatus (Coccosterphus) Distant, 1916a : 175. LECTOTYPE ♀ with labels: 'Type' and 'S. India.; E. A. Butler.; 1915–60.' and 'Chikkaballapura; S. India.; T. V. Campbell.' and 'Coccosterphus; paludatus; type Dist.'.
There are two males from the type-series in the collection.

palus (Ouranorthus) Buckton, 1905a : 333. Holotype ♀ with labels: 'Type' and 'ph' and 'Bangalore' and 'Museo; de; Madrid.' and 'Lab. ent. Escalena.' and 'Oxyrhachis; palus; Buckt.' and 'Ouranorthus; (type) palus,; Buckt.; = Oxyrhachis; palus. B.'.
The posterior pronotal process is glued separately.

pandatus (Oxyrhachis) Distant, 1916d : 20. Holotype ♀ with labels: 'Type' and 'Cameroons.; Escalera.; 1903–355.' and 'Oxyrhachis; pandatus; type Dist.'.
The right tegmen is missing.

parallela (Oxyrhachis) Walker, 1851a : 508. Holotype ♀ with labels: 'Type' and '40; 6.26; 367.' and '10. OXYRHACHIS PARALLELA.'.

The right tegmen is missing.

pardalina (Adippe) Fowler, 1896b : 134. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Adippe; pardalina; Fowler. TYPE' and the B.C.A. label.

There are five other females and a male from the type-series in the collection.

partita (Darnis) Walker, 1858a : 75. LECTOTYPE ♂ with labels: 'Type' and 'Amaz' and '68.4' and 'partita Walk'.

pattersoni (Hamma) Distant, 1916b : 157. Holotype ♀ with labels: 'Type' and 'GOLD COAST; ABURI; 1912–13; W. H. PATTERSON' and 'Hamma; pattersoni; type Dist.'.

peracatus (Leptocentrus) Distant, 1916b : 151. LECTOTYPE ♀ with labels: 'Type' and 'Somali.; 95–120' and 'Leptocentrus; peracatus; type Dist.'.

There are three other females from the type-series in the collection.

perfecta (Thelia) Walker, 1858b : 139. Holotype ♂ with labels: 'Type' and 'S. Amer; napo; 51; 70' and 'THELIA PERFECTA.'.

The abdomen is glued separately.

perpolita (Gargara) Distant, 1915c : 490. LECTOTYPE ♂ with labels: 'Type' and '1912–193' and 'Uganda Prot.; Mpanga Forest,; Toro. 4,800 ft.; 13–23 Nov. 1911.; S. A. Neave.' and 'Gargara; perpolita; type Dist.'.

There is another male from the type-series in the collection.

persistens (Smilia) Walker, 1858c : 338. Holotype ♀ with labels: 'Type' and 'Tun-; antins; 57; 125' and 'SMILIA PERSISTENS.'.

phasianus (Lycoderes) Fowler, 1908e : 164. LECTOTYPE ♀ with labels: 'Type' and 'Bugaba; 800–1500 ft; Champion.' and 'Brit. Mus.; 1904–55.' and 'Lycoderes; phasianus Fowler.; TYPE.' and the B.C.A. label.

The pronotum is damaged. There is a male from the type-series in the collection.

piceus (Centrotus) Walker, 1870a : 187. LECTOTYPE ♂ with labels: 'Type' and 'Bac.' and '68.4' and 'Wallace' and 'picea'.

picta (Umbonia) Walker, 1858b : 130. Holotype ♀ with labels: 'Type' and 'Mex.; 56; 143' and 'UMBONIA PICTA.'.

pictipennis var. ***laevior (Bolbonota)*** Fowler, 1894b : 18. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'B. pictipennis; v. laevior. Fowler; TYPE.' and the B.C.A. label.

There are two other females and a male from the type-series in the collection.

pileatus (Phaulocentrus) Fowler, 1896d : 159. LECTOTYPE ♀ with labels: 'Type' and 'S. Geronimo,; 3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Phaulocentrus; pileatus. Fowler.; TYPE.' and the B.C.A. label.

There is another female from the type-series in the collection.

pilosa (Gargara) Funkhouser, 1927b : 7. Holotype ♀ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra,; Pres. by; E. Jacobson.' and 'Anei Kloof; (Sumatra's West; kust) 500M. 1925; leg. E. Jacobson.' and 'Gargara pilosa; HOLOTYPE ♀; W. D. Funkhouser'.

pilosis (Tricentrus) Funkhouser, 1932a : 120. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1933–360.' and 'B.N. BORNEO.; Mt. Kinabalu,; kiau, 3,000 ft.; 7:4:1929.; H. M. Pendlebury; coll.; F.M.S. Museums.' and 'HOLOTYPE; Tricentrus pilosis; W. D. Funkhouser'.

pilosus (Centrotus) Walker, 1851a : 606. Holotype ♂ with labels: 'Type' and 'N.; India; 48; 134' and '18. CENTROTUS PILOSUS,'.

pilosus (Periaman) Distant, 1916a : 157. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Ind. Mus.; Kurseong; 6000 ft.; E. Himalayas; 15–viii–09.; D'Abreu' and 'Periaman; pilosus; type Dist.'.

There is another female from the type-series in the collection.

pinguis (Aconophora) Fowler, 1895a : 64. LECTOTYPE ♀ with labels: '♀' and 'Type' and 'Bugaba,; Panama.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; pinguis. Fowler; ♀ TYPE' and the B.C.A. label.

There are two other females and two males from the type-series in the collection.

plana (Ceresa) Walker, 1851a : 529. LECTOTYPE ♂ with labels: 'Type' and 'Rio; 45; 56.' and '16. CERESA PLANA,'.

There are two females and a specimen without an abdomen from the type-series in the collection.

platycerus (Centrotus) Walker, 1851a : 618. Holotype ♀ with labels: 'Type' and 'Jamaica; 45; 110.' and '50. CENTROTUS PLATYCERUS.'.

plicata (Bolbonota) Buckton, 1901a : 63. LECTOTYPE ♀ with labels: 'Type' and 'Cachabe,; low c., I. 97.; (Rosenberg).' and 'Tecanion; plicatum'.

The left tegmen is missing.

polita (Stictopelta) Butler, 1878a : 339. Holotype ♀ with labels: 'Type' and 'Ega; Brasil; 57; 43' and 'S. polita; Butler Type'.

ponderifer (Oxyrhachis) Walker, 1862a : 317. Holotype ♂ with labels: 'Type' and 'Miss Pascoe.; 96–41.' and 'Moreton; Bay' and 'Oxyrhachis; ponderifer Wk.' and 'Oxyrhachis; ponderifer; type Walk.'.

porosa (Hoplophora) Walker, 1851a : 513. LECTOTYPE with labels: 'Type' and '39; 7.17.; 952' and 'Holophora [sic]; porosa, Walk.'.

The abdomen is missing.

porrecta (Aconophora) Walker, 1851a : 538. Holotype ♀ with labels: 'Type' and '198.; ♀; N.C.' and 'Ent. Club.; 44–12.' and 'Membr cultrata Fabr ??; Coqueb. Ill. Ic. t 18.4.' and '12. ACONOPHORA PORRECTA,'.

The tegmina are missing.

primus (Barsumas) Distant, 1916b : 156. LECTOTYPE ♀ with labels: 'Type' and '1902; 4236' and 'SALISBURY,; 5000 feet,; Mashonaland.; Capt. Oct. 1901; & pres. 1902 by; Guy Marshall.' and 'Barsumas; typicus; type Dist.'.

This last label is in error; the genus was monotypic. There is another female from the type-series in the collection.

proclivis (Hyphinoe) Distant, 1900a : 695. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; B.M. 1911–383.' and 'proclivis; Dist.' and 'Bruschik (Tala-; manca); 35; H. Pittier'.

projecta (Telamona) Butler, 1877a : 221. Holotype with labels: 'Type' and 'T.' and 'Kirby.' and '58; 60' and 'T. projecta; Butler Type'.

The head and abdomen are missing and the wings and tegmina damaged.

projectus (Tricentrus) Distant, 1908g : 55. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'projectus; type Dist.'.

prominens (Tragopa) Walker, 1858b : 151. LECTOTYPE ♂ with labels: 'Type' and 'Braz; 52; 44' and '481' and 'TRAGOPA PROMINENS.'.

There is another male from the type-series in the collection.

pronotalis (Centrotypus) Distant, 1916c : 317. Holotype ♀ with labels: 'Type' and 'Java' and 'Java; Wallace' and 'Centrotypus; pronotalis; type Dist.'.

pronus (Tricentrus) Distant, 1916a : 166. LECTOTYPE ♂ with labels: 'Type' and '1978; 21' and 'Distant Coll.; 1911–383.' and 'Ind. Mus.; Kavalai.; 1300–3000 ft.; Cochin State.; 24–27. ix. 14.; F. H. Gravely.' and 'Tricentrus; pronus; type Dist.'.

The posterior pronotal process is broken and glued separately. There is another male from the type-series in the collection.

proxima (Hoplophora) Walker, 1851a : 513. Holotype ♂ with labels: 'Type' and 'Quito; 46; 62' and 'near Hoplophora; vicina L. Fairm' and '15. HOPLOPHORA PROXIMA,'.

proximus (Phaulocentrus) Fowler, 1896d : 160. Holotype ♀ with labels: 'Type' and 'Cerro Zunil,; 1–5000 ft; Champion.' and 'Brit. Mus.; 1904–55.' and 'Phaulocentrus; proximus. Fowler; TYPE.' and the B.C.A. label.

pruinosa (Tropidocyta) Haviland, 1925a : 237. Holotype ♀ with labels: 'Kartabo, Brit. Guiana; June. 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Tropidocyta; pruinosa,; Haviland'.

The right wing and tegmen are glued separately.

prunitia (Aconophora) Butler, 1878a : 350. LECTOTYPE ♀ with labels: 'Type' and '58.135 MEX.; (Oajaca.)' and 'A. prunitia; Butler Type.'.

There are another female and a male from the type-series in the collection.

pubescens (Aconophora) Walker, 1858a : 70. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'pubescens Walk'.

pubescens (Amblycentrus) Fowler, 1896d : 158. Holotype ♂ with labels: 'Type' and 'Xucumanatlan,; Guerrero,; 7000 ft.; July. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Amblycentrus; pubescens Fowler; TYPE.' and the B.C.A. label.

The left wing and tegmen are missing.

pubescens (Hemiptycha) Walker, 1858b : 144. Holotype ♀ with labels: 'Type' and 'mex; 56; 143' and 'HEMIPTYCHA PUBESCENS.'.

pubescens (Hoplophora) Buckton, 1902a : 96. LECTOTYPE ♀ with labels: 'Type' and 'Bogota.' and 'B; 216' and 'Hoplophora; pubescens,'.

punctata (Membracis) Fabricius, 1775a : 676. LECTOTYPE ♀ with labels: 'Braz.' and '63; 47' and associated with it, though not mounted on the same pin, 'Type' and 'Membracis punctata ; Fab. Entom. p.676. 7.'.

The right suprahumeral horn is missing and the left is damaged. From the Joseph Banks Collection; the 'Type' label is handwritten.

punctata (Stictopelta) Fowler, 1895a : 57. Holotype ♀ with labels: 'Type' and 'Mescala,; Guerrero.; H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Stictopelta; punctata. Fowler; TYPE.' and the B.C.A. label.

punctifera (Parmula) Walker, 1858b : 153. Holotype ♀ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; H. Clark.' and 'PARMULA PUNCTIFERA.'.

punctosa (Pterygia) Walker, 1858a : 65. LECTOTYPE with labels: 'Type' and 'Amaz' and '68.4' and 'punctosa Walk'.

The abdomen is missing.

purpureus (Leptocentrus) Funkhouser, 1929a : 471. Holotype ♂ with labels: 'Brit. Mus.; 1930–324.' and 'N. BORNEO.; BETTOTAN,; NR. SANDAKAN; Aug. 18th 1927.; C. B. K. & H. M. P.; F.M.S.; Museums.' and 'HOLOTYPE; Leptocentrus purpureus; W. D. Funkhouser,'.

There are two discoidal cells in the tegmina, not three as stated in the description.

purulensis (Hyphinoe) Fowler, 1895b : 77. LECTOTYPE ♂ with labels: 'Type' and '♂' and 'Purula,; Guatemala.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hyphinoe; purulensis; Fowler ♂; TYPE.' and the B.C.A. label.

There are three females from the type-series in the collection also.

pygmaea (Hypsauchenia) Buckton, 1903a : 211. LECTOTYPE ♂ with labels: 'Type' and 'Assam' and 'Distant Coll.; 1911–383.' and 'Hypsauchenia; pygmaea. Buckt.; type n.s. 142.'.

There is another male from the type-series in the collection.

pygmaeus (Centrotus) Walker, 1851a : 630. LECTOTYPE ♀ with labels: 'Type' and 'Phil; Isl; 42; 22' and '75. CENTROTUS PYGMAEUS,'.

The tegmina are missing.

pyropinus (Periaman) Distant, 1908g : 38. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Ruby Mines; (Doherty)' and 'pyropinus; type Dist'.

quadricolor (Enchenopa) Walker, 1858a : 60. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'S.; America' and 'quadricolor Walk'.

***quadrimaculata* (*Enchenopa*)** Walker, 1858b : 124. Holotype ♀ with labels: 'Type' and 'Santar; em; 54; 63' and 'Santarem' and 'ENCHENOPA QUADRIMACULATA.'.

***queenslandensis* (*Godingella*)** Distant, 1916d : 32. LECTOTYPE ♀ with labels: 'Type' and 'Queensland.; F. P. Dodd.; 1907–54.' and 'Godingella; queenslandensis; type Dist.'.
There is another female from the type-series in the collection.

***ramosus* (*Centrotus*)** Distant, 1908g : 47. Holotype ♀ with labels; 'Type' and 'Distant Coll.; 1911–383.' and 'Udagama' and 'Centrotus; ramosus; type Dist.'.
The pronotum is damaged.

***recta* (*Ceresa*)** Walker, 1858a : 68. LECTOTYPE ♀ with labels: 'Type' and 'recta Walk'.

***rectangulatus* (*Centrotus*)** Kirby, 1891a : 166. LECTOTYPE ♂ with labels: 'Type' and '41' and 'Pundaloya; Ceylon.' and 'Centrotus; rectangu–; latus; Kb type; Ceylon; Green Coll.; 90–115.'.
There are two other males from the type-series in the collection.

***rectidorsum* (*Periaman*)** Funkhouser, 1927d : 107. Holotype ♀ with labels: 'Brit. Mus.; 1928–174.' and 'Anai Kloof; (Sumatra's West; kust) 500M. 1926; leg. E. Jacobson.' and 'Genus near; Periaman Dist; Congeneric with P. wallacei; Dist.; det.; W. E. China 1926.' and 'HOLOTYPE; Periaman rectidorsum; W. D. Funkhouser'.

***recurvata* (*Telingana*)** Distant, 1916e : 288. Holotype ♀ with labels: 'Type' and 'S.A.R.' and '91; 118' and 'Wallace' and 'Telingana; recurvata; type Dist.'.

***recurvus* (*Otinotus*)** Distant, 1916b : 154. LECTOTYPE ♀ with labels: 'Holo; type' and 'Entebbe,; Uganda.; 26–29 June 1912.; C. C. Gowdey.; 1912–462.' and 'Otinotus; recurvus; type Dist.' and 'Synonymic; with; Leptocentrus grossus; det. R. J. Izzard. 1954.'.

***reducta* (*Entylia*)** Walker, 1851a : 549. Holotype ♀ with labels: 'Type' and 'New; York.' and 'U.S.; 43; 15.' and '11. ENTYLIA REDUCTA,'.

***reducta* (*Umbonia*)** Walker, 1851a : 520. Holotype ♀ with labels: 'Type' and 'Para; 40; 133' and '14. UMBONIA REDUCTA,'.

***reductus* (*Centrotus*)** Walker, 1870a : 190. LECTOTYPE ♀ with labels: 'Type' and 'Wag.' and '68.4' and 'Wallace' and 'reductus'.

***reflexa* (*Polyglypta*)** Butler, 1877a : 207. Holotype ♂ with labels: 'Type' and 'Guatema.; 55.71.' and 'P. reflexa; Butler Type.'.
The genitalia are mounted beneath the specimen.

***relatus* (*Eufairmairia*)** Distant, 1916d : 36. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Gayndah.' and 'Gayndah; Queensland' and 'Eufairmairia; relatus; type Dist.'.

***remigium* (*Anchon*)** Buckton, 1903a : 215. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Anchon; remigium; type' and 'e'.
The head is glued separately and the pronotum is damaged.

***repandus* (*Tricentrus*)** Distant, 1916a : 163. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Assam' and 'Tricentrus; repandus; type Dist.'.

***reponens* (*Centrotus*)** Walker, 1851a : 604. LECTOTYPE ♂ with labels: 'Type' and 'Tenass; erim; 44; 24' and '14. CENTROTUS REPONENS,'.

***resectus* (*Tricentrus*)** Distant, 1916a : 167. Holotype ♀ with labels: 'Type' and 'Pusa Coll.; 1915–164.' and 'Maymyo v. 10; H. L. Andrewes' and 'Tricentrus; resectus; type Dist.'.

***reticulata* (*Poppea*)** Fowler, 1895d : 101. Holotype ♀ with labels: 'Type; H.T.' and '♀' and 'Panajachel,; 5000 ft.; Champion.' and 'Poppaea [sic]; reticulata; Fowler. TYPE' and the B.C.A. label.

***reticulata* (*Triquetra*)** Walker, 1851a : 524. Holotype with labels: 'Type' and 'Colum; -bia; 47; 25' and '15. TRIQUETRA RETICULATA.'.
The head and abdomen are missing and the right tegmen is damaged.

***reticulatus* (*Scalmophorus*)** Fowler, 1894b : 23. LECTOTYPE ♀ with labels: 'Type' and 'S. Geronimo,; 3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Scalmophorus; reticulatus. Fowler; TYPE' and the B.C.A. label.

There is another female from the type-series in the collection.

***reticulatus* (*Sextius*)** Distant, 1916d : 34. Holotype ♀ with labels: 'Type' and 'New; Holl; 44; 4' and 'Sextius; reticulatus; type Dist.'.

***retractus* (*Centrotus*)** Walker, 1870a : 190. LECTOTYPE ♂ with labels: 'Type' and 'M' and '68.4' and 'Morty; Wallace' and 'retractus'.

***retusus* (*Sarritor*)** Distant, 1916a : 182. LECTOTYPE ♂ with labels: 'Type' and '47; 41' and 'Ind. Mus.; Outside; Farm Caves; nr Moulmein; Lr. Burma; 17.xi–4.xii.11.; F H Gravely' and 'Sarritor; retusus; type Dist.'.

There is a female from the type-series in the collection.

***reversa* (*Thelia*)** Walker, 1858a : 72. LECTOTYPE ♀ with labels: 'Type' and 'Mex' and '68.4' and 'reversa Walk'.

***ridiculus* (*Sphongophorus*)** Walker, 1858a : 64. LECTOTYPE with labels: 'Type' and '68.4' and 'Amaz' and 'ridiculus Walk'.

The abdomen is missing.

***ridleyanus* (*Centrochares*)** Distant, 1915b : 328. LECTOTYPE ♀ with labels: 'Type' and 'Singapore.; H. N. Ridley.; 1902–284.' and 'Centrochares; ridleyanus; type Dist.'.

There are another female and a male from the type-series in the collection.

***rivulata* (*Gargara*)** Distant, 1908g : 64. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Mungphu.' and 'Gargara; rivulata; type. Dist'.

***robusta* (*Ceresa*)** Butler, 1877a : 216. Holotype ♀ with labels: 'Type' and 'Braz' and '68.4' and 'C. robusta; Butler Type.'.

***robusta* (*Darnis*)** Walker, 1851a : 579. Holotype ♂ with labels: 'Type' and 'Para; 50; 2' and '25. DARNIS ROBUSTA,'.

The abdomen is eaten away.

***robusta* (*Gargara*)** Distant, 1908g : 61. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Cal' and 'Gargara; robusta; type Dist.'.

There are four other males from the type-series in the collection.

***robustulus* (*Sphongophorus*)** Fowler, 1894c : 29. LECTOTYPE ♀ with labels: 'Type' and '♀' and 'Duenas,; Guatemala,; G. C. Champion.' and 'Brit. Mus.; 1904–55.' and 'Sphongophorus; robustulus. Fowler; ♀ TYPE.' and the B.C.A. label.

The abdomen is missing. There is a male from the type-series in the collection; its pronotum is badly damaged.

***rolandi* (*Terentius*)** Distant, 1915c : 492. Holotype ♀ with labels: 'Type' and 'N. Queensland.; Kuranda, 1,100 ft.; June 21–July 24, 1913.; R. E. Turner.; 1913–438.' and 'Terentius; rolandi; type Dist.'.

The head is missing.

***rubra* (*Rhexia*)** Funkhouser, 1935d : 433. Holotype ♀ with labels: 'Type; H.T.' and 'BRITISH GUIANA; Cattle Trail Survey; Kurupakari; R. Essequibo; August 1920.; A. A. Abraham. Coll.' and 'Pres. by; Imp. Inst. Ent.; B.M. 1935–297.' and 'HOLOTYPE; Rhexia rubra; W. D. Funkhouser'.

***rubridorsata* (*Pterosticta*)** Buckton, 1903a : 230. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Centruchoides; rubridorsi ♀' and 'Pterosticta; rubridorsata; type Buckt.'.

The specimen was erroneously described as female.

***rubrilinea* (*Pterosticta*)** Buckton, 1903a : 230. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'rubrilineata; ♂ [sic]' and 'Pterosticta; rubrilinea; type Buckt.'.

The head is missing.

***rubripes* (*Marshallella*)** Goding, 1927b : 169. LECTOTYPE ♀ with labels: 'Type' and 'Marshallella; rubripes; gen. et sp. nov.; F. W. Goding det.' and 'Cinchona,; JAMAICA;

21.vii.1923; No. 1275' and 'C. C. Gowdey.' and 'Pres. by; Imp. Bur. Ent.; Brit. Mus.; 1928–436.'.

There are four other females from the type-series in the collection.

rubropedalis (Cymbomorpha) Buckton, 1902a : 139. LECTOTYPE ♀ with labels: 'Type' and 'Brasil; ?; d.; 2.35' and 'Cymbomor; pha; rubropedalis'.

There is a male from the type-series in the collection also.

rudis (Oxyrhachis) Walker, 1851a : 509. LECTOTYPE ♂ with labels: 'Type' and 'N.; Bengal; 42; 25' and '13. OXYRHACHIS RUDIS,'.

There is a female from the type-series in the collection which previously bore the 'Type' label; this was in error as Walker described the species from the male specimens.

rufescens (Ceresa) Butler, 1877a : 218. Holotype ♀ with labels: 'Type' and 'Braz' and '68.4' and 'C. rufescens; Butler Type.'.

rufescens (Otinotus) Distant, 1908g : 40. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'rufescens; type Dist.'.

There is another female from the type-series in the collection.

rufescens (Oxyrhachis) Walker, 1851a : 506. Holotype ♀ with labels: 'Type' and '1908' and '7. OXYRHACHIS RUFESCENS,'.

The posterior pronotal process is broken.

rufiventris (Centrotus) Walker, 1851a : 616. Holotype ♀ with labels: 'Type' and 'Moreton; Bay; 50; 71' and '46. CENTROTUS RUFIVENTRIS.'.

All the pronotal processes are broken.

rufivitta (Thelia) Walker, 1851a : 559. Holotype ♂ with labels: 'Type' and '41.; 5.17; 292.' and 'E. Doubleday.; St. John's Bluff,; E. Florida.' and '12. THELIA RUFIVITTA,'.

rufospinus (Leptocentrus) Funkhouser, 1927b : 13. Holotype ♀ with labels: 'Sumatra.; Pres. by E. Jacobson.' and 'Fort de Kock; (Sumatra) 920M.; 1926; leg. E. Jacobson.' and 'Brit. Mus.; 1926–401.' and 'HOLOTYPE ♀; Leptocentrus rufospinus; W. D. Funkhouser.'.

The allotype is also in the collection.

rufotestaceus (Centriculus) Fowler, 1896d : 157. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui; 8000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and '48' and 'Centriculus; rufo-testaceus Fowler; TYPE.' and the B.C.A. label.

There are two other females from the type-series in the collection.

rufula (Gargara) Funkhouser, 1935d : 429. Holotype ♀ with labels: 'Type; H.T.' and 'GOLD COAST; ABURI; 1912–13; W. H. PATTERSON' and 'Pres. by; Imp. Inst. Ent.; B.M. 1935–297.' and 'Gargara; rufula; HOLOTYPE; W. D. Funkhouser'.

rugosa (Enchenopa) Fowler, 1894b : 10. Holotype ♀ with labels: 'Type' and 'Chilpancingo,; Guerrero,; 4000 ft.; June. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'E. rugosa Fowler; TYPE' and the B.C.A. label.

The specimen is badly damaged.

rugosus (Campylocentrus) Buckton, 1903a : 243. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Campylo-; centrus; rugosus; Buckt.; type'.

rustica (Parayasa) Distant, 1916a : 181. Holotype ♀ with labels: 'Type' and 'Lovedale; Nilgiri Hills.; S. India.; T. V. Campbell.' and 'S. India.; E. A. Butler.; 1915–60.' and '237' and 'Parayasa; rustica; type Dist.'.

rusticana (Oxyrhachis) Capener, 1962 : 38. Holotype ♀ with labels: 'HOLOTYPE.' and 'Oxyrhachis; rusticana; CAPENER' and 'DRAWING; No. 434' and 'S. Africa.; R. E. Turner.; Brit. Mus.; 1932–551.' and 'E. Cape Prov.; Katberg.; 1–13. xi. 1932.'.

There is a female paratype in the collection also.

sallaei (Tropidoscyta) Fowler, 1894b : 13. LECTOTYPE ♀ with labels: 'Type' and 'San Felix,; Panama.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Tropidoscyta; sallei [sic]. Fowler; TYPE' and the B.C.A. label.

There are another female and a male from the type-series in the collection.

salvini (Orthoplophora) Fowler, 1894c : 47. Holotype ♂ with labels: 'Type' and 'Rinconada.; Mexico.; Schaus.' and 'Brit. Mus.; 1904–55.' and 'Orthoplophora; salvini. Fowler; TYPE.' and the B.C.A. label.

salvini (Telamona) Distant, 1879a : 11. Holotype ♀ with labels: 'Type' and 'Chinautla,; 4100 ft., Guat.; O. Salvin.' and 'Distant Coll.; B.M. 1911–383.' and 'Salvini; Dist; (type)'. and the B.C.A. label.

satyrus (Daimon) Buckton, 1903a : 240. LECTOTYPE ♂ with labels: 'Type' and 'Daimon; satyrus; type Buckt.' and 'Heine' and 'Daimon; cuneatum'.

There are another male and a female from the type-series in the collection.

satyrus (Telamona) Fowler, 1896d : 145. LECTOTYPE ♀ with labels: 'Type' and 'Quiche Mts.,; 7–9000 ft.; Champion.' and '34' and 'Brit. Mus.; 1904–55.' and 'Telamona; satyrus. Fowler.; TYPE' and the B.C.A. label.

There is a male from the type-series in the collection.

scabricula (Tragopa) Walker, 1858a : 75. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'scabricula Walk'.

scaphiformis (Polyglyptodes) Fowler, 1896b : 129. LECTOTYPE ♀ with labels: 'Type' and 'Cerro Zunil,; 4000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Polyglyptodes; scaphiformis; Fowler. TYPE' and the B.C.A. label.

Glued to the same card as another female, the lectotype is indicated by an adjacent red ink spot.

scenica (Enchenopa) Walker, 1851a : 487. LECTOTYPE ♂ with labels: 'Type' and 'Rio; 45; 66' and 'Colombia' and '30. ENCHENOPA SCENICA,'.

There is a female from the type-series in the collection.

scutellaris (Tragopa) Buckton, 1902a : 156. LECTOTYPE ♀ with labels: 'Type' and 'Amazons; c.; b. 84' and 'very near a species standing; in the B.M. under the name; of T. fulvovaria Fairm.'.

The head is missing.

scutellata (Telingana) China, 1925c : 480. Holotype ♀ with labels: 'Type; H.T.' and 'Brit. Mus.; 1923–114.' and 'S. W. China:; Yunnan.; S. E. of Atuntzu.; 12.000'.; 20.vii.1922.; Prof. J. W. Gregory.; Wooded; valley.' and 'Telingana; scutellata China; TYPE; W. E. China. det.'.

scutellatus (Leptocentrus) Distant, 1916a : 155. LECTOTYPE ♀ with labels: 'Type' and 'S. India.; E. A. Butler.; 1915–60.' and 'Kodai Kanal; S. India. Campbell.' and 'R.R.; 5.14;' 374' and 'Leptocentrus; scutellatus; type Dist.'.

There are another female and two males from the type-series in the collection.

securis (Centrotypus) Buckton, 1903a : 238. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Ruby Mines; Burma' and 'securis; Buckt.'.

There is another female from the type-series in the collection.

segmentata (Hypamastris) Fowler, 1895d : 93. LECTOTYPE ♀ with labels: 'Type; H.T. and 'Teapa,; Tabasco.; H. H. S.;' and 'Brit. Mus.; 1904–55.' and 'Hypamastris; segmentata. Fowler; TYPE.' and the B.C.A. label.

One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot. The locality label is duplicated. There are seven other females and a specimen without an abdomen from the type-series in the collection.

selenus (Centrotus) Buckton, 1903a : 247. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty)' and 'Centrotus; selenus; Buckt; cb'.

semibrunnea (Gargara) Funkhouser, 1929a : 477. Holotype ♂ with labels: 'Brit. Mus.; 1930–324.' and 'N. BORNEO.; BETTOTAN,; NR. SANDAKAN.; Aug: 12th 1927.; C. B. K. & H. M. P.; F.M.S.; Museums.' and 'HOLOTYPE; Gargara semibrunnea; W. D. Funkhouser'.

There are also the fragments of a male paratype in the collection.

semifascia (Centrotus) Walker, 1857a : 94. LECTOTYPE ♂ with labels: 'Type' and '68.4' and 'MAL; CA' and 'Wallace' and 'semifascia Walk'.

The abdomen is glued separately.

***semifascia* (*Thelia*)** Walker, 1851a : 561. LECTOTYPE ♀ with labels: 'Type' and '41; 5 17.; 305' and 'E. Doubleday.; St. John's Bluff,; E. Florida.' and '16. THELIA SEMIFASCIA,'.
There are a male and two specimens without abdomens from the type-series in the collection also.

***semilucidus* (*Centrotus*)** Walker, 1870a : 186. LECTOTYPE ♀ with labels: 'Type' and 'Wag.' and '68.4' and 'Wallace' and 'semilucidus'.
The head is missing.

***semitecta* (*Hoplophora*)** Walker, 1858b : 129. LECTOTYPE ♂ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; H. Clark.; 57.43.' and 'HOPLOPHORA SEMITECTA.'.

***semivitreus* (*Centrotus*)** Walker, 1857a : 94. LECTOTYPE with labels: 'Type' and 'SING.' and 'Wallace' and 'semivitreus Walk'.
The abdomen is missing.

***semivitta* (*Horiola*)** Walker, 1851a : 586. Holotype ♀ with labels: 'Type' and 'Colum-; bia; 47; 25' and '7. HORIOLA SEMIVITTA,'.

***sericea* (*Enchenopa*)** Walker, 1851a : 493. Holotype ♀ with labels: 'Type' and 'Vene-zuela; 47; 1' and '41. ENCHENOPA SERICEA,'.

***sericea* (*Gargara*)** Distant, 1908g : 63. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Kerbewa; Ceylon. 4.03' and 'Gargara; sericea; type Dist.'.
The pronotum is damaged.

***serraticornis* (*Lycoderes*)** Fowler, 1908e : 165. LECTOTYPE ♀ with labels: 'Type' and 'V. de. Chiriqui,; 4,000–6,000 ft.; Champion' and 'Brit. Mus.; 1904–55.' and 'Lycoderes; serraticornis; Fowler. TYPE.' and the B.C.A. label.
One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot. There are also two other females from the type-series in the collection.

***serricorne* (*Centrotus*)** Walker, 1858a : 77. LECTOTYPE ♂ with labels: 'Type' and '68.4' and 'Haiti.' and 'Centrotus; serricorne; TYPE Walk.; det. W. E. China. 1927'.
There is also a female from the type-series in the collection.

***setosa* (*Poppea*)** Fowler, 1895d : 97. LECTOTYPE ♀ with labels: 'Type; H.T.' and 'Teapa,; Tabasco.; H. H. S.' and 'nec hirta F.' and 'Poppaea [sic]; setosa Fowler; TYPE' and the B.C.A. label.
There are two other females and a specimen without an abdomen from the type-series in the collection.

***sexmaculata* (*Membracis*)** Walker, 1858a : 59. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Hond; Dys' and 'sexmaculata Walk.'.

***shelfordi* (*Centrotypus*)** Distant, 1916c : 315. Holotype ♂ with labels: 'Type' and 'Sarawak.; Shelford.; 1900–117.' and 'Centrotypus; shelfordi; type Dist.'.

***shoanus* (*Centrotus*)** Distant, 1916c : 323. Holotype ♀ with labels: 'Type' and 'Abyssin; 91; 9' and 'Centrotus; shoanus; type Dist.'.

***siamensis* (*Centrotypus*)** Distant, 1916c : 316. Holotype ♀ with labels: 'Type' and 'Annandale & Robinson.; Siamese Malay States.; 1903–127.' and 'B.B.: 2,500 ft; No: 1/9/01' and 'Centrotypus; siamensis; type Dist.'.

***sikhimensis* (*Gargara*)** Distant, 1908g : 64. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Sikkim' and 'Gargara; sikkimensis [sic]; type Dist.'.
There is another male from the type-series in the collection.

***similis* (*Thelia*)** Walker, 1851a : 556. LECTOTYPE ♀ with labels: 'Type' and 'Brazil; 43; 86' and '7. THELIA SIMILIS.'.
There is another female from the type-series in the collection.

***simplex* (*Centrotus*)** Walker, 1858a : 78. LECTOTYPE ♀ with labels: 'Type' and 'Cape' and 'simplex Walk'.

sinanjensis (Aconophora) Fowler, 1895a : 70. LECTOTYPE ♂ with labels: 'Type' and 'Sinanja,; Vera Paz.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; sinanjensis; Fowler. TYPE' and the B.C.A. label.

Glued to the same card as a female, the lectotype is indicated by an adjacent red ink spot.

sinuata (Metheisa) Buckton, 1903a : 186. LECTOTYPE ♀ with labels: 'Type' and 'Brazil; C.; 9.3' and 'Metheisa; sinuata'.

sinuata (Telamona) Fowler, 1896c : 144. LECTOTYPE ♂ with labels: 'Type' and 'Amula,; Guerrero,; 6000ft.; Aug. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Telamona; sinuata Fowler.; TYPE.' and the B.C.A. label.

There is a female from the type-series in the collection.

sinuatus (Evanchon) Funkhouser, 1935d : 428. Holotype ♂ with labels: 'Type; H.T.' and 'Pres. by; Imp. Inst. Ent.; B.M. 1935–224.' and 'D. 589.; Uganda; Kampala.; 14. iv. 1932.; H. Hargreaves.' and 'Nymph; sucking; coffee; shoot; D. 589.' and 'HOLOTYPE; Evanchon sinuatus; W. D. Funkhouser'.

The type is teneral; there is a nymph mounted on the same pin.

sinuatus (Gnamptocentrus) Fowler, 1896d : 152. LECTOTYPE ♂ with labels: 'Type' and 'Brit. Mus.; 1904–55.' and 'Teapa,; Tabasco.; H. H. S.' and 'Gnamptocentrus; sinuatus ♂; Fowler TYPE.' and the B.C.A. label.

There are two other males and four females from the type-series in the collection.

sinuosus (Platybelus) Distant, 1916b : 155. Holotype ♀ with labels: 'Type' and 'Nyassa' and 'Distant Coll.; 1911–383.' and 'Platybelus; sinuosus; type Dist.'.

The left wing and tegmen are missing.

sobria (Triquetra) Walker, 1851a : 523. Holotype ♀ with labels: 'Type' and 'Quito; 46; 62' and '13. TRIQUETRA SOBRIA,'.

solomonensis (Otinotoides) Distant, 1916d : 41. Holotype with labels: 'Type' and '57' and 'Distant Coll.; 1911–383.' and 'Solomon Is.; July – Aug., 1909.; W. W. Froggatt.' and 'Otinotoides; solomonensis; type Dist.'.

The abdomen and right tegmen are missing and the pronotum is badly damaged.

sooknana (Demanga) Distant, 1908g : 69. Holotype ♂ with labels: 'Type' and 'SOOKNA; 533 feet' and 'Distant Coll.; 1911–383.' and 'Demanga; sooknana.; type Dist.'.

sordidus (Anchonoides) Funkhouser, 1928a : 13. Holotype ♂ with labels: 'Type' and 'Brit. Mus.; 1933–360' and 'Siberut Island; West Sumatra; Sept. 1924; C. B. K. and N. S.; Raffles; Museum; Singapore.' and 'HOLOTYPE; Anchonoides sordidus; W. D. Funkhouser'.

The pronotum is damaged.

sordidus (Phaulocentrus) Fowler, 1896d : 160. Holotype ♀ with labels: 'Type' and 'Soledad,; Guerrero,; 5500 ft.; July. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Phaulocentrus; sordidus. Fowler; TYPE.' and the B.C.A. label.

The posterior pronotal process is broken.

spathata (Aconophora) Butler, 1878a : 347. Holotype ♀ with labels: 'Type' and 'Brazil.' and '59.57; Vigors' Coll.' and 'A. spathata; Butler Type.'.

The head is missing.

spatulosa (Hemiptycha) Buckton, 1902a : 137. Holotype ♀ with labels: 'Type' and 'Brazil; ?; d; 2.22' and 'sp' and 'u. spatula; m.' and 'Hemiptycha; spatulosa,; (type) Buckt.'.

spicatus (Otinotoides) Distant, 1916d : 42. Holotype ♀ with labels: 'Type' and 'Queensland.; F. P. Dodd.; 1907–54.' and 'Kuranda, Qld; Sepr. .04; F. P. Dodd.' and 'Otinoides [sic]; spicatus; type Dist.'.

spinalis (Leioscyta) Haviland, 1925a : 240. Holotype ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; September, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Leioscyta; spinalis,; Haviland.'.

spinicornis (Oxyrhachis) Walker, 1862a : 316. Holotype ♀ with labels: 'Type' and 'Moreton; Bay' and 'Miss Pascoe.; 96–41.' and 'Oxyrhachis; spinicornis; type Walk; ty' and 'Oxyrhachis; spinicornis Wk.'.

spinidorsis (Tricentrus) Funkhouser, 1929a : 475. Holotype ♀ with labels: 'Type' and 'Brit. Mus.; 1930–324.' and 'N. BORNEO; KUDAT,; 10th Sept. 1927.; C. B. K. & H. M. P.; F.M.S.; Museums.' and 'HOLOTYPE; Tricentrus spinidorsis; W. D. Funkhouser'.

There is a female paratype in the collection also.

spiniferus (Centrochares) Funkhouser, 1927b : 19. Holotype ♀ with labels: 'Brit. Mus.; 1926–401.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Anei Kloof; (Sumatra's West; Kust) 500M.; leg. E. Jacobson.' and 'Centrochares ♀; spiniferus; HOLOTYPE; W. D. Funkhouser.'.

spiniger (Telamona) Haviland, 1925a : 257. Holotype ♀ with labels: 'Type' and 'Kartabo; Bartica District; British Guiana; 24–VI 1922' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; June, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Telamona; spinigera; Haviland'.

spinigera (Thelia) Walker, 1851a : 557. Holotype ♀ with labels: 'Type' and '16.' and '8. THELIA SPINIGERA,'.

The left tegmen is missing.

spinula (Pterygia) Buckton, 1901a : 72. LECTOTYPE ♀ with labels: 'Type' and 'Philippine Is; Luzon.' and 'P. spinula'.

The suprahumeral horns are damaged.

splendidula (Gargara) Distant, 1916a : 172. LECTOTYPE ♂ with labels: 'Type' and 'E. Ind; 58.; 60.' and 'Gargara; splendidula; type Dist.'.

The left tegmen is lost and the posterior pronotal process broken. There is another male from the type-series in the collection.

spreta (Pterosticta) Buckton, 1903a : 230. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and '18' and 'spreta.' and 'Pterosticta; spreta; type Buckt.'.

The wings and tegmina are missing.

stabilis (Aconophora) Walker, 1858b : 135. Holotype ♀ with labels: 'Type' and 'Mexico; 53; 86' and 'ACONOPHORA STABILIS.'.

The head and right wing are missing, the right tegmen is glued separately.

stalii (Ceresa) Butler, 1877a : 217. Holotype ♀ with labels: 'Type' and 'Mex' and '68.4' and 'C. Stalii; Butler Type'.

stipatus (Heteronotus) Walker, 1858b : 155. LECTOTYPE ♀ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; H. Clark.; 57.43.' and 'HETERONOTUS STIPATUS.'.

There are two other females from the type-series in the collection.

straminea (Polyglypta) Walker, 1851a : 544. LECTOTYPE ♀ with labels: 'Type' and 'Columbi; 43; 64.' and '12. POLYGLYPTA STRAMINEA,'.

There is another female from the type-series in the collection.

strigata (Polyglypta) Walker, 1858b : 136. Holotype ♂ with labels: 'Type' and '58.135 MEX.; (Oajaca.)' and 'Polyglypta; strigata.; (Type) Walk.'.

The left tegmen is missing.

strigata (Polyglypta) Buckton, 1902a : 180. Holotype with labels: 'Type' and 'Java [?]' and 'P. strigata' and 'Polyglypta; strigata; (type) Buckt.; = P. buctoni; Funkh.; nom. nov.'.

The abdomen is lost and the tegmina are glued separately.

strigatus (Centrotus) Walker, 1870a : 184. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Dor.' and 'Wallace' and 'strigatus'.

strigosus (Heniconotus) Butler, 1878a: 361. Holotype ♂ with labels: 'Type' and 'St; Paulo; 65; 3' and 'H. strigosus; Butler Type'.

strigulosa (Horiola) Walker, 1858b : 153. Holotype ♂ with labels: 'Type' and 'Santar; em; 54; 63' and '93' and 'HORIOLA STRIGULOSA.'.

stupida (Darnis) Walker, 1851a : 577. LECTOTYPE ♂ with labels: 'Type' and 'R' and '790' and '16. DARNIS STUPIDA,'.

There are another male, three females and two specimens without abdomens from the type-series in the collection.

styliformis (Bilimekia) Fowler, 1895f : 127. LECTOTYPE ♂ with labels: 'Type' and 'Bilimek; Mexico; 1883. II; Quadalu; 437' and 'Brit. Mus.; 1904–55.' and the B.C.A. label.

subangulata (Enchenopa) Walker, 1858a : 61. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Venez' and 'Venezuela' and 'subangulata Walk'.
The pronotal horns and the tips of the tegmina are broken.

subangulatus (Tricentrus) Distant, 1908g : 55. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'NILGIRI; (HAMPSON)' and 'subangulatus; type Dist.'.

suberecta (Oxyrhachis) Walker, 1851a : 508. Holotype ♂ with labels: 'Type' and '40; 6.26; 368.' and '11. OXYRHACHIS SUBERECTA,'.
The left tegmen is missing.

suberecta (Pyrgauchenia) Distant, 1915b : 325. LECTOTYPE ♂ with labels: 'Type' and '21' and 'Distant Coll.; 1911–383.' and 'S. Celebes; Bua-Kraeng; 5000' Febr. 1896; H. Fruhstorfer.' and 'Pyrgauchenia; suberecta; type Dist.'.
The tip of the anterior pronotal process is missing. There are three other males and a female which may be from the type-series in the collection.

subflavipes (Centrotus) Walker, 1870a : 189. LECTOTYPE ♀ with labels: 'Type' and 'N' and '68.4' and 'N Gui; Wallace' and 'subflavipes'.
The head is lost and the pronotal horns broken.

subfusca (Hypsauchenia) Buckton, 1903a : 211. LECTOTYPE ♀ with labels: 'Type' and 'Assam' and '143.' and 'B; 143' and 'Distant Coll.; 1911–383.' and 'Hypsauchenia; subfusca.'.
The anterior pronotal horn is damaged. There is another female from the type-series in the collection.

subjecta (Oxyrhachis) Walker, 1851a : 504. Holotype ♂ with labels: 'Type' and 'India' and '1906' and '2. OXYRHACHIS SUBJECTA'.
The pronotal processes are broken.

subminax (Pterygia) Walker, 1862a : 316. Holotype ♂ with labels: 'Type' and 'Miss Pascoe; 96–41.' and 'Prov.; Rio' and 'Pterygia; subminax Wr.' and 'Pterygia; subminax; type Walk.'.
The posterior pronotal process is damaged.

subrugosa (Poppea) Fowler, 1895d : 99. Holotype ♂ with labels: 'Type; H.T.' and '♂' and 'Cerro Zunil,; 4–5000 ft.; Champion.' and 'Poppaea [sic]; subrugosa; Fowler. TYPE' and the B.C.A. label.

subserrata (Oxyrhachis) Walker, 1851a : 506. Holotype ♀ with labels: 'Type' and 'Congo; 43; 56.' and '6. OXYRHACHIS SUBSERRATA.'.

subsimilis (Centrotus) Walker, 1857b : 163. LECTOTYPE ♀ with labels: 'Type' and 'SAR.' and 'Wallace' and 'subsimilis Walk'.
The abdomen is missing.

subsimilis (Pterygia) Walker, 1858b : 128. Holotype ♀ with labels: 'Type' and 'CONSTANCIA; Jany. 1857.; J. Gray.; 57.57.' and 'PTERYGIA SUBSIMILIS.'.
The specimen is badly damaged and the head is missing.

substitutus (Centrotus) Walker, 1851a : 605. Holotype ♀ with labels: 'Type' and 'substitutus'.

substriata (Thelia) Walker, 1851a : 558. LECTOTYPE ♂ with labels: 'Type' and '41.; 5 17; 293.' and 'F. Doubleday.; St. John's Bluff,; E. Florida.' and '11. THELIA SUBSTRIATA'.
The right tegmen is lost.

subtrigona (Enchenopa) Walker, 1851a : 485. Holotype ♂ with labels: 'Type' and 'Venez-; uela.' and 'Vene-; zuela; 47; 52' and '27. ENCHENOPA SUBTRIGONA,'.
The anterior pronotal horn is broken.

succisus (Daunus) Buckton, 1903a : 226. Holotype with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Adelaide' and 'aw' and 'Daunus; succisus; type Buckt.' and 'Centruchus; succisus'.
The abdomen is missing and pronotum and tegmina damaged.

suffulta (Dograna) Distant, 1908g : 24. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Bombay.; Dixon.' and 'Dograna; suffulta; type Dist.'.

The left tegmen is lost.

suffusa (Ceresa) Walker, 1851a : 530. Holotype ♀ with labels: 'Type' and 'suffusa; Walk'. and '17. CERESA SUFFUSA'.

suffusa (Phyllotropis) Buckton, 1901a : 38. Holotype ♀ with labels: 'Type' and 'Java [?]' and 'not in; B.M.' and 'Phyllotropis; suffusa; (type) Buckt.' and 'suffusa'.

The tip of the posterior pronotal process is missing.

sulphurea (Hille) Butler, 1877a : 206. Holotype ♀ with labels: 'Type' and 'Bogot' and '68.4' and 'Hille; sulphurea; Butler Type'.

sumatrensis (Hybandoides) Funkhouser, 1927b : 15. Holotype ♀ with labels: 'Fort de Kock; (Sumatra) 920M.; 1926; leg. E. Jacobson.' and 'Sumatra.; Pres. by; E. Jacobson.' and 'Brit. Mus.; 1926–401.' and 'Hybandoides ♀; sumatrensis; HOLOTYPE; W. D. Funkhouser.'.

The allotype is also in the collection.

surgens (Aconophora) Walker, 1858a : 69. LECTOTYPE ♂ with labels: 'Type' and '68.4' and 'surgens Walk'.

The tegmina are missing.

surgens (Membracis) Walker, 1851a : 475. Holotype ♀ with labels: 'Type' and 'Brasil.' and '1939' and '10. MEMBRACIS SURGENS'.

The head is missing and the abdomen damaged.

tacta (Thelia) Walker, 1851a : 560. Holotype ♀ with labels: 'Type' and 'Mexico; 43; 13' and '15. THELIA TACTA,'.

The left wing and tegmen are damaged.

talumensis (Centrotus) Distant, 1916e : 292. Holotype ♂ with labels: 'Type' and 'Annandale & Robinson.; Siamese Malay States.; 1903–127.' and 'Talum; 20/1/02' and 'Centrotus; talumensis; type Dist.'.

The pronotum is broken.

tanganensis (Oxyrhachis) Buckton, 1903a : 225. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tanga; Germ. E.Afr.' and 'C. Tanganensis; n.s.; b.a. type'.

tau (Hyphinoe) Fowler, 1895b : 76. LECTOTYPE ♂ with labels: 'Type' and 'El Reposo,; 800 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hyphinoe; tau. Fowler; TYPE.' and the B.C.A. label.

There are two other males from the type-series in the collection.

tau var. ***atitlana (Hyphinoe)*** Fowler, 1895b : 76. LECTOTYPE ♂ with labels: 'Type' and 'V. de Atitlan,; 25–3500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hyphinoe; tau. Fowler; v. atitlanus; TYPE' and the B.C.A. label.

There is another male from the type-series in the collection.

tauriformis (Centrotypus) Distant, 1916c : 317. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Java; (Buckt. Coll.)' and 'Centrotypus; tauriformis; type Dist.'.

taurifrons (Centrotus) Walker, 1851a : 608. Holotype ♂ with labels: 'Type' and 'Java; 50; 44' and '22. CENTROTUS TAURIFRONS,'.

taurus (Centrotypus) Distant, 1916c : 316. Holotype ♂ with labels: 'Type' and 'Annandale & Robinson.; Siamese Malay States.; 1903–127.' and 'G; 11/1/02' and 'Centrotypus; taurus; type Dist.'.

taurus (Membracis) Fabricius, 1775a : 676. LECTOTYPE with labels: 'India' and associated with it though not mounted on the same pin, 'Type' and 'Membracis Taurus; Fab. Entom. p. 676. 9.'.

The abdomen is missing. From the Joseph Banks Collection; the 'Type' label is handwritten.

tectigera (Tropidarnis) Fowler, 1895a : 60. Holotype ♀ with labels: 'Type' and 'Amula,; Guerrero,; 6000 ft.; Aug. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Tropidarnis; tectigera. Fowler; TYPE.' and the B.C.A. label.

temaxia (Aconophora) Fowler, 1895a : 70. LECTOTYPE ♀ with labels: 'Type' and '♀' and 'Temax,; N. Yucatan; Gaumer.' and 'Brit. Mus; 1904–55.' and 'Aconophora; temaxia. Fowler; TYPE' and the B.C.A. label.

There are two other females from the type-series in the collection.

tenebrosus (Centrotus) Walker, 1851a : 623. Holotype ♀ with labels: 'Type' and 'Sierra; Leone; Morgan.; 42; 31.' and '58. CENTROTUS TENEBROSUS.'.

tenuicorne (Aconophora) Walker, 1858a : 70. LECTOTYPE ♀ with labels: 'Type' and 'Amaz' and '68.4' and 'tenuicorne Walk'.

tenuicornis (Leptocentrus) Funkhouser, 1927b : 11. Holotype ♂ with labels: 'Sumatra.; Pres. by; E. Jacobson.' and 'LUBUK SULASIH; Sumatra 1000M; Sept. 1920.; leg. E. JACOBSON.' and 'Brit. Mus.; 1926–401.' and 'Leptocentrus; tenuicornis; HOLOTYPE; ♂; W. D. Funkhouser.'.

terminalis (Acutalis) Walker, 1858a : 76. LECTOTYPE with labels: 'Type' and 'Brazil.' and 'Braz' and '68.4' and 'terminalis Walk'.

The abdomen is missing.

terminalis (Centrotus) Walker, 1851a : 604. LECTOTYPE ♀ with labels: 'Type' and 'China; 46; 24' and '13. CENTROTUS TERMINALIS,'.

There are another female, a male and a specimen without an abdomen from the type-series in the collection.

terminalis (Ceresa) Walker, 1851a : 528. Holotype ♀ with labels: 'Type' and 'Ent. Club.; 44.12.' and '14. CERESA TERMINALIS,'.

terribilis (Umbonia) Walker, 1858a : 66. LECTOTYPE ♀ with labels: 'Type' and 'Col. I.; Gaad' and 'terribilis Walk'.

tessellatus (Ebhul) Distant, 1914j : 337. Holotype ♀ with labels: 'Type; H.T.' and '1914; 415' and '21' and 'Mt. Merinjak; Alt. 600 ft; May 20 1914.' and 'Ebhul; tessellatus type Dist.'.

testudinea (Vanduzea) Haviland, 1925a : 251. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; July, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Vanduzea; testudinea; Haviland'.

One of two females mounted together, the lectotype is indicated by an adjacent red ink spot. There are four other females from the type-series in the collection.

testudo (Adippe) Buckton, 1903a : 188. LECTOTYPE ♀ with labels: 'Type' and 'Bogota' and 'Pres. by; National Museum; of Wales; ex-Ripon coll.; B.M. 1931–199.' and 'Adippe' and 'Adippe; testudo Buckt.; TYPE; det. W. E. China 1931.'.

tetyrides (Tragopa) Walker, 1851a : 580. Holotype ♀ with labels: 'Type' and 'B. Guian; 44; 85' and '4. TRAGOPA TETYRIDES.'.

The specimen is teneral.

thelwalli (Leptocentrus) Distant, 1916d : 24. Holotype ♀ with labels: 'Type' and 'Nyassa.; 77.103.' and 'Leptocentrus; thelwallii; [sic] type Dist.'.

thoracata (Hyphinoe) Distant, 1900a : 695. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; B.M. 1911–383.' and 'thoracata; Dist.' and 'Guaitil de; Pirris (Pac).; 34; P. Biolley'.

tibialis (Centrotus) Walker, 1870a : 188. LECTOTYPE ♂ with labels: 'Type' and 'N' and 'N. Gui.; Wallace' and 'tibialis'.

The head, pronotum, abdomen, etc., are glued separately to a card.

tonkinensis (Subrincator) Distant, 1916b : 157. LECTOTYPE ♀ with labels: 'Type' and 'Near Chapa,; Lao Kay,; Upper Tonkin.; March. 1913.; R. Vitalis.' and 'Subrincator,; tonkinensis; type Dist.'.

There is another female from the type-series in the collection.

torva (Poppea) Fowler, 1895d : 98. Holotype ♀ with labels: 'Type; H.T.' and '♂ [sic]' and 'Las Mercedes,; 3000ft.; Champion.' and 'Poppaea [sic]; torva; Fowler. TYPE' and the B.C.A. label.

transiens (Centrotus) Walker, 1851a : 624. Holotype with labels: 'Type' and '1904' and '61. CENTROTUS TRANSIENS,'.

The abdomen and tegmina are missing.

transversalis (Darnis) Walker, 1858b : 148. Holotype ♂ with labels: 'Type' and 'Mex; 56; 143' and 'DARNIS TRANSVERSALIS.'.

transversus (Centrotus) Distant, 1908g : 48. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Lethierry.' and 'Marghirit' and 'transversus; type Dist.'.

transversus (Otinotus) Distant, 1916a : 161. Holotype ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Lahore; Punjab' and 'Otinotus; transversus; type Dist.'.

travancorensis (Telingana) Distant, 1916a : 151. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Travancore; W. Ghats.' and 'Telingana; travancorensis; type Dist.'.

tricolor (Polyglypta) Butler, 1877a : 209. LECTOTYPE ♀ with labels: 'Type' and '58.135 MEX.; (Oajaca.)'.

There are another female and a male from the type-series in the collection.

tridens (Omolon) Walker, 1862a : 316. Holotype ♀ with labels: 'Type' and 'Para' and 'Miss Pascoe.; 96–41.' and 'Omolon; tridens; type Walk'.

trifoliaceus (Centrotus) Walker, 1858b : 163. Holotype ♀ with labels: 'Type' and 'N. China.; 54.8–' and 'CENTROTUS TRIFOLIACEUS.'.

trigona (Horiola) Walker, 1851a : 587. LECTOTYPE ♀ with labels: 'Type' and 'Colombia' and 'Colum-; bia; 47; 25' and '8. HORIOLA TRIGONA,'.

trinodosus (Heteronotus) Butler, 1878a : 357. Holotype ♂ with labels: 'Type' and 'Mexico' and '42; 16.' and 'H. trinodosus; Butler Type.'.

trinotata (Gargara) Distant, 1908g : 63. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Gargara; trinotata; type Dist.'.

tripartita (Darnis) Walker, 1851a : 576. Holotype ♂ with labels: 'Type' and 'E. Doubleday.; St. John's Bluff,; E. Florida.' and '41.; 5.17.; 289.' and '15. DARNIS TRIPARTITA,'.

triste (Pedalion) Buckton, 1903a : 252. Holotype ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Cameroons; BZ. ♀' and 'Pedalion triste' and 'triste Buckt.; type'.

The pronotum is damaged.

truncaticornis (Centrotus) Walker, 1858a : 81. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'Port; Phil' and 'truncaticornis Walk.'.

truncaticornis (Hemiptycha) Walker, 1858a : 73. LECTOTYPE ♀ with labels: 'Type' and 'Braz' and '68.4' and 'truncaticornis Walk'.

truncaticornis (Sipylus) Funkhouser, 1936d : 188. Holotype ♂ with labels: 'Type' and 'Brit. Mus.; 1936–638' and 'MALAYA; Kuala Lumpur.; 24.3.1935.; H. M. Pendlebury.; Coll:; F.M.S. Museums.' and 'HOLOTYPE; Sipylus truncaticornis; W. D. Funkhouser.'.

tuberculatus (Oxyrhachis) Walker, 1858a : 109. LECTOTYPE ♀ with labels: 'Type' and 'Cape' and '68.4' and 'tuberculatus'.

tumescens (Emphusis) Buckton, 1903a : 256. LECTOTYPE ♀ with labels: 'Type' and 'Java' and 'Distant Coll.; 1911–383.' and 'Emphusis; obesus.; n.g.; j' and 'Emphusis; tumescens; type Buckt.'.

The posterior pronotal process is broken. There are another female and a male from the type-series in the collection.

tumida (Thelia) Walker, 1851a : 560. Holotype ♀ with labels: 'Type' and '41.; 5 17.; 306.' and 'E. Doubleday.; St. John's Bluff,; E. Florida,' and '14. THELIA TUMIDA,'.

tumulata (Publilia) Buckton, 1903a. LECTOTYPE ♀ with labels: 'Type' and 'Columbia: C.; 9.1' and 'Pubblilia [sic]; tumulata'.

The abdomen is glued separately. The description of this species is with the explanation to plate xxxix.

turgescens (Aspona) Fowler, 1894c : 50. LECTOTYPE ♀ with labels: 'Type' and 'Cubilguitz,; Vera Paz.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Aspona; turgescens; Fowler. TYPE' and the B.C.A. label.

turrita (Entylia) Butler, 1877a : 212. Holotype ♂ with labels: 'Type' and 'Rio; 59 ; 21' and 'E. turrita; Butler Type'.

turritella (Telamona) Buckton, 1903a : 198. LECTOTYPE ♂ with labels: 'Type' and 'Saguenay; V. Huart' and 'M.R. Belg.' and 'Telamona; turritella.'.

The right tegmen is missing. There is another specimen from the type-series in the collection, its abdomen is missing.

typica (Nilautama) Distant, 1908g : 32. LECTOTYPE ♀ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'Nilautama; typica Dist.; type'.

typica (Parayasa) Distant, 1916a : 177. LECTOTYPE ♂ with labels: 'Type' and 'S. India.; E. A. Butler.; 1915–60.' and 'Kodai Kanal; S. India. Campbell.' and 'K.K.; 5.14.; 39; 4' and 'Parayasa; typica; type Dist.'.

There is another male from the type-series in the collection.

typicus (Anchonoides) Distant, 1916a : 162. Holotype ♀ with labels: 'Type' and 'Hakgala; Ceylon 3.07' and 'Anchonoides; typicus; type Dist.'.

typicus (Imporcitor) Distant, 1916a : 157. Holotype ♀ with labels: 'Type' and '426' and 'S. India.; E. A. Butler.; 1915–60.' and 'Nilgiri Hills; S. India; T. V. Campbell' and 'Imporcitor; typicus; type Dist.'.

typicus (Tiberianus) Distant, 1915c : 494. Holotype ♀ with labels: 'Type' and 'S.E. RHODESIA,; Umtali. 3700 ft.; Capt. Sep. 19.05; & pres. 1906 by; Guy Marshall.' and 'Tiberianus; typicus; type Dist.'.

The wings and tegmina are damaged.

u-flava (Quadrinarea) Goding, 1927b : 168. LECTOTYPE ♀ with labels: 'Type' and 'Brit. Mus.; 1958–412.' and 'Quadrinaria [sic] u-flava; Godg.; Hill Gardens, Jamaica; 5.VI.1921 No. 579; C. C. Gowdey'.

ugandensis (Leptocentrus) Distant, 1916b : 151. LECTOTYPE ♀ with labels: 'Type' and '1912.193' and '3–7 Nov. 1911.; S. A. Neave.' and 'Uganda Prot.; Buamba Forest.; Semliki Valley.; 2,300–2,800 ft.' and 'Leptocentrus; ugandensis; type Dist.'.

There are six other females and a specimen without an abdomen from the type-series in the collection.

ulniforme (Anchon) Buckton, 1903a : 216. LECTOTYPE ♂ with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'Tenass Vall; Myitta; (Doherty).' and 'ulniforme c.c.; Anchon; porusm [sic]'.

There are two other males and three females from the type-series in the collection.

unanimis (Thelia) Walker, 1851a : 566. LECTOTYPE ♀ with labels: 'Type' and '199.; ♀' and 'Ent. Club.; 44–12.' and '37. THELIA UNANIMIS'.

uncicornis (Ceresa) Fowler, 1895d : 104. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 4000–6000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'C. unciornis [sic]; Fowler. TYPE' and the B.C.A. label.

There are three other females from the type-series in the collection.

undulatus (Sphongophorus) Walker, 1851a : 498. Holotype ♂ with labels: 'Type' and 'Para; 50; 2' and '9. SPHONGOPHORUS UNDULATUS,'.

The abdomen is lost.

undulatus (Tshaka) Distant, 1916c : 324. Holotype ♂ with labels: 'Type' and 'Mashonaland.; Salisbury.; G. A. K. Marshall.; Dec. 1904.; 1906–182.' and 'Tshaka; undulatus; type Dist.'.

unicolor (Oxyrhachis) Walker, 1851a : 509. LECTOTYPE ♀ with labels: 'Type' and 'E. Indies; 47; 14.' and '12. OXYRHACHIS UNICOLOR,'.

The tip of the posterior pronotal process is missing. There are another female and a specimen without an abdomen from the type-series in the collection.

uniformis (Tropidoscyta) Fowler, 1894b : 14. LECTOTYPE ♂ with labels: 'Type' and 'Boquete,; 3500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Tropidoscyta; uniformis. Fowler.; TYPE.' and the B.C.A. label.

There is another male from the type-series in the collection.

vacca (Ceresa) Fowler, 1895d : 106. Holotype ♀ with labels: 'Type' and 'Omilteme,; Guerrero,; 8000 ft.; July. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Ceresa; vacca; Fowler. TYPE.' and the B.C.A. label.

valida (Triquetra) Walker, 1851a : 524. Holotype ♂ with labels: 'Type' and 'Mexico; 43; 13' and '16. TRIQUETRA VALIDA,'.

varia (Pterygia) Walker, 1851a : 502. Holotype ♀ with labels: 'Type' and 'Colum-; bia; 47; 71' and '17. PTERYGIA VARIA.'.

varia (Thelia) Walker, 1851a : 555. LECTOTYPE ♀ with labels: 'Type' and 'Colum-; bia; 47; 25' and '5. THELIA VARIA,'.

The right tegmen is missing. There is another specimen from the type-series in the collection, its abdomen is missing.

variabilis (Ceresa) Fowler, 1895d : 105. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 2–3000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Ceresa; variabilis; Fowler. TYPE.' and the B.C.A. label.

There are four other females and five males from the types-series in the collection..

variabilis var. ***intermedia (Ceresa)*** Fowler, 1895d : 105. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 25–4000 ft,; Champion.' and 'Brit. Mus.; 1904–55.' and 'Ceresa; variabilis; var. intermedia; Fowler. TYPE' and the B.C.A. label.

There are two other females and a male from the type-series in the collection.

varians (Enchenopa) Walker, 1858a : 62. LECTOTYPE ♀ with labels: 'Type' and '68.4' and 'varians Walk'.

The head and right tegmen are missing.

varians (Stictopelta) Fowler, 1894c : 56. LECTOTYPE ♂ with labels: 'Type' and 'Ventanas, Mex.,; 2000 ft.; Forrer.' and 'Brit. Mus.; 1904–55.' and 'Stictopelta; varians Fowler; TYPE.' and the B.C.A. label.

There is another male from the type-series in the collection.

variata (Phacusa) Fowler, 1895d : 111. LECTOTYPE ♂ with labels: 'Type' and 'Quiche Mts.,; 7–9000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Phacusa; variata; Fowler. TYPE' and the B.C.A. label.

There are another male and two females from the type-series in the collection, the head and pronotum of one of the females is missing.

varicosa (Rhexia) Butler, 1878a : 356. Holotype ♀ with labels: 'Type' and 'Ega; 58; 6' and 'R. varicosa; Butler Type.'.

The tegmina are missing.

variegata (Hypamastris) Fowler, 1895d : 94. Holotype ♂ with labels: 'Type; H.T.' and '58.135 MEX.; (Oajaca.)' and 'Brit. Mus.; 1904–55.' and 'Hypamastris; variegata Fowler.; TYPE.' and the B.C.A. label.

The right tegmina is lost.

variipennis (Aconophora) Fowler, 1895a : 67. Holotype ♀ with labels: 'Type' and 'Temax.; N. Yucatan.; Gaumer.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; varipennis [sic]. Fowler; TYPE.' and the B.C.A. label.

varipennis (Ophicentrus) Buckton, 1903a : 250. LECTOTYPE ♀ with labels: 'Type' and 'Old; Calab; 59; 37' and 'Ophicentrus; varipennis; (type) Buckt.'.

There are two specimens without abdomens from the type-series in the collection.

***varipes* (*Centrotus*)** Walker, 1857b : 164. LECTOTYPE ♂ with labels: 'Type' and 'SAR.' and '68.4' and 'Wallace' and 'varipes Walk'.

Erroneously described as female. The posterior pronotal process is missing.

***varius* (*Centrotus*)** Walker, 1858b : 162. Holotype ♀ with labels: 'Type' and 'Birmah; 57; 16' and 'CENTROTUS VARIUS.'.

The head is missing.

***varius* (*Omolon*)** Walker, 1862a : 316. Holotype ♀ with labels: 'Type' and 'Para' and 'Miss Pascoe; 96–41.' and 'Omolon; varius; type Walk'.

***venosa* (*Enchenopa*)** Walker, 1851a : 488. LECTOTYPE ♀ with labels: 'Type' and 'United; States' and 'NY' and '1870' and '33. ENCHENOPA VENOSA,'.

***venosa* (*Horiola*)** Walker, 1858a : 76. LECTOTYPE ♂ with labels: 'Type' and 'Colombia' and 'Colum; bys' and '68.4' and 'venosa Walk.'.

***venosa* (*Triquetra*)** Walker, 1851a : 523. Holotype ♀ with labels: 'Type' and 'Colum-; bia; 47; 25' and '14. TRIQUETRA VENOSA'.

The abdomen is glued separately and the tegmina are lost.

***venosus* (*Centrotus*)** Walker, 1870a : 189. LECTOTYPE ♀ with labels: 'Type' and 'Tond.' and 'Wallace' and 'venosus'.

Erroneously described as male.

***vergens* (*Membracis*)** Buckton, 1905a : 330. LECTOTYPE ♀ with labels: 'Type' and 'M.R. Belg.' and 'ck' and 'Coll. Camille; Van Voixem.' and 'Sta Calloerine; Juls 1868' and 'membracis; micans; (type) Buck't.'.

Buckton's taxonomic label is misplaced here, the two species being quite distinct. Both species are described on the same page and it is here that the error may have arisen. There are two other females from the type-series in the collection.

***versicolor* (*Oxyrhachis*)** Distant, 1915b : 322. LECTOTYPE ♀ with labels: 'Type' and '281' and 'Aden; 90–126.' and 'Oxyrhachis; versicolor; type Dist.'.

There are three other females and a male from the type-series in the collection. The head of the lectotype is missing.

***vespiformes* (*Heteronotus*)** Haviland, 1925a : 247. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; June, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Heteronotus; vespiformis [sic]; Haviland'.

The pronotum is damaged.

***vetusta* (*Oxyrhachis*)** Walker, 1851a : 507. Holotype ♀ with labels: 'Type' and 'Port; Natal; 49; 29.' and '8. OXYRHACHIS VETUSTA,'.

The head and posterior pronotal process are missing.

***vicarius* (*Centrotus*)** Walker, 1851a : 605. LECTOTYPE ♀ with labels: 'Type' and 'Java; 43; 35.' and '15. CENTROTUS VICARIUS,'.

***virescens* (*Cyrtolobus*)** Fowler, 1896c : 141. Holotype ♀ with labels: 'Type' and 'Xucumanatlan, Guerrero,; 7000 ft.; July. H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Cyrtolobus; virescens: Fowler; TYPE.' and the B.C.A. label.

***virescens* (*Gargara*)** Funkhouser, 1927h : 256. Holotype ♀ with labels: 'Brit. Mus.; 1930–324.' and '151' and 'MALAY PENIN:; Selangor, F.M.S.; Kuala Lumpur; on Ficus sp.; March 27th 1926; H. M. Pendlebury.; EX COLL:; F.M.S. MUSEUM.; and 'HOLOTYPE; Gargara virescens; W. D. Funkhouser'.

The left tegmen is glued separately. There are also two paratypes in the collection, both are damaged and without abdomens.

***virescens* (*Ochrolomia*)** Butler, 1878a : 338. Holotype ♂ with labels: 'Type' and 'Rio; 59; 21' and 'O. virescens; Butler Type.'.

***viridescens* (*Aconophora*)** Walker, 1851a : 538. Holotype ♀ with labels: 'Type' and '13. ACONOPHORA VIRIDESCENS,'.

viridicollis (Micrutalis) Fowler, 1895e : 118. Holotype ♀ with labels: 'Type' and 'Bugaba,; 800–1500 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Micrutalis; viridicollis.; Fowler. TYPE' and the B.C.A. label.

viridissima (Hemiptycha) Walker, 1851a : 572. Holotype ♀ with labels: 'Type' and 'Mexico' and 'Ent. Club.; 44–12.' and 'H. viridiss-; ima Walk; = valida.'.

viridissima (Thelia) Walker, 1858b : 138. LECTOTYPE ♀ with labels: 'Type' and 'Mexico; 52; 67.' and 'THELIA VIRIDISSIMA.'.

viridistriga (Hemiptycha) Walker, 1858b : 145. LECTOTYPE ♀ with labels: 'Type' and 'TEJUCA; Jany. 1857.; H. Clark.; 57.50' and 'HEMIPTYCHA VIRIDISTRIGA.'.

There is another female from the type-series in the collection.

viridula (Aconophora) Fowler, 1895a : 71. LECTOTYPE ♀ with labels: 'Type' and 'Teapa,; Tabasco.; Feb. H. H. S.' and 'Brit. Mus.; 1904–55.' and 'Aconophora; viridula; Fowler. TYPE.' and the B.C.A. label.

The right tegmen is missing. There is another female from the type-series in the collection.

vismiae (Amastris) Haviland, 1925a : 252. LECTOTYPE ♀ with labels: 'Type' and 'Kartabo,; Brit. Guiana.; B.M. 1924–519.' and 'Kartabo, Brit. Guiana; August, 1922; e coll. M. D. Haviland; d.d. Collegium Newnhamense' and 'Amastris; vismiae; Haviland'.

There are three other females and two males from the type-series in the collection.

vitreipennis (Campylocentrus) Fowler, 1896d : 150. LECTOTYPE ♀ with labels: 'Type' and 'Senahu,; Vera Paz.; Champion' and 'Brit. Mus.; 1904–55.' and 'Campylocentrus; vitreipennis. Fowler; TYPE.' and the B.C.A. label.

The specimen was erroneously described as male.

vitta (Centrotus) Walker, 1851a : 626. Holotype ♀ with labels: 'Type' and '584' and '64. CENTROTUS VITTA,'.

The specimen is badly damaged.

vittata (Publilia) Buckton, 1903a : 184. Holotype ♂ with labels: 'Type' and 'New; York; C.; 8.7' and 'Publilia; vittata; (type) Buckt.'.

vittatipennis (Cyrtolobus) Fowler, 1896c : 142. LECTOTYPE ♀ with labels: 'Type' and 'Quiche Mts.,; 7–9000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Cyrtolobus; vittatipennis; Fowler. TYPE' and the B.C.A. label.

There is another female from the type-series in the collection.

vitulus (Membracis) Fabricius, 1775a : 677. LECTOTYPE ♀ with labels: 'America' and associated with it, though not on the same pin, 'Type' and 'Membracis Vitulus; Fab. Entom. p. 677. 10.'.

From the Joseph Banks Collection, the 'Type' label is handwritten.

vitulus var. ***minor (Ceresa)*** Fowler, 1895d : 103. LECTOTYPE ♀ with labels: 'Type' and 'Teapa,; Tabasco.; Feb. H. H. S.' and 'Brit. Mus.; 1904–55.' and 'Ceresa vitulus; v. minor Fowler; TYPE' and the B.C.A. label.

There are four other females, three males and three specimens without abdomens from the type-series in the collection.

vomeris (Kleidos) Buckton, 1903a : 214. Holotype ♀ with labels: 'Type' and 'Kleidos' and 'Old; Cal.' and 'vomeratus [sic]; (Stegaspis); (type) Buckt.'.

The left tegmen and wing are missing and the suprahumeral horn damaged. The species is erroneously described from Ceylon.

vulpecula (Hyphinoe) Fowler, 1895b : 77. LECTOTYPE ♀ with labels: 'Type' and 'V. de Chiriqui,; 4000–6000 ft.; Champion.' and 'Brit. Mus.; 1904–55.' and 'Hemiptycha; vulpecula Fowler; TYPE' and the B.C.A. label.

There is another female from the type-series in the collection.

w-album (Aconophora) Buckton, 1902a : 132. Holotype ♀ with labels: 'Type' and 'Chimbo,; 1000'. VIII. 97.; (Rosenberg).' and 'Punctodon; w. album; m.' and 'Aconophora: w. album,; Buckt.; (type)' and '= Sphongophorus; mackinula,; Bredd.?'.

The anterior pronotal process is damaged and the tegmina missing.

wallacei (Periaman) Distant, 1916c : 320. LECTOTYPE ♀ with labels: 'Type' and 'SAR.; Borneo; 56.44' and 'Periaman; wallacei; type Dist.'.

There is another female from the type-series in the collection.

wallacei (Sarantus) Stal, 1863c : 592. LECTOTYPE ♀ with labels: 'Type' and 'Wag.' and '67.66.' and 'wallacei; Stal'.

wealei (Centrotusoides) Distant, 1916d : 30. LECTOTYPE with labels: 'Type' and 'Distant Coll.; 1911–383.' and 'S. Africa; M Weale' and 'Centrotusoides; wealei; type Dist.'.

The abdomen is lost and the tegmina damaged. There is a female from the type-series in the collection; its head is missing.

xantha (Pterosticta) Buckton, 1903a : 231. LECTOTYPE ♀ with labels: 'Type' and 'B; 177' and 'Distant Coll.; 1911–383.' and 'Pterosticta; xantha; Buckt.; type' and 'Carunchy.; 11.1.87. Tepper; Bursaria'.

One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot; its left tegmen and wing are missing.

xanthomelas (Heteronotus) Walker, 1858c : 339. Holotype ♀ with labels: 'Type' and 'Tun-; antin; 57; 125' and 'HETERONOTUS XANTHOMELAS.'.

xautipae (Psilocentrus) Fowler, 1896d : 157. LECTOTYPE ♀ with labels: 'Type' and 'Xautipa,; Guerrero,; H. H. Smith.' and 'Brit. Mus.; 1904–55.' and 'Psilocentrus; xautipae. Fowler.; TYPE.' and the B.C.A. label.

One of two females glued to the same card, the lectotype is indicated by an adjacent red ink spot. There is a male from the type-series in the collection.

yerburyi (Oxyrhachis) Distant, 1916d : 21. Holotype ♀ with labels: 'Type' and 'Aden; 84–43.' and 'Oxyrhachis; yerburyi; type Dist.'.

The left tegmen is lost.

zonifera (Ochrolomia) Butler, 1878a : 339. Holotype ♀ with labels: 'Type' and 'Mex.' and 'O. zonifera; Butler Type.'.

The specimen is badly damaged.

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GALL-FORMING THRIPS AND ALLIED SPECIES (THYSANOPTERA: PHLAEOTHRIPINAE) FROM *ACACIA* TREES IN AUSTRALIA

4 MAR 1971

L. A. MOUND

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LAURENCE ALFRED MOUND

Pp. 387–466 102 *text-figures*

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By L. A. MOUND

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SYNOPSIS

Seventeen genera and fifty-five species of Phlaeothripinae associated with the leaves and phyllodes of Australian *Acacia* trees are figured and keyed. Six of these genera and eighteen of the species are here described as new, and many of the pre-existing nominal taxa are redescribed as they are not recognizable from their original descriptions. Also included are four new generic synonyms, fourteen new specific synonyms, and thirteen new combinations. The gall-forming habit is discussed and notes are given on the biology and morphological variation of most species. The phylogenetic relationships of this Australian group of genera are discussed, and the host-plant relationships are summarized in a table. The introduction includes short accounts of mounting methods and the morphological characters referred to in the keys.

INTRODUCTION

ACACIA and *Eucalyptus* are the two dominant plant genera of Australia. It is remarkable that although *Eucalyptus* is heavily attacked by insects there are no leaf-feeding Thysanoptera from any species of this genus, with the exception of the small polyphagous heliothripine *Australothrips bicolor*, although leaf-rolling Phlaeothripinae certainly occur on other Myrtaceae. On the other hand the genus *Acacia*, particularly the division Phyllodineae, supports numerous species of leaf-feeding Thysanoptera and a number of these have a gall-forming relationship with one or more host-species.

The phyllodinous *Acacia* species, in which the usual Leguminous bipinnate leaf is replaced by a flattened expansion of the petiole called a phyllode, are almost entirely limited to Australia. It is not surprising therefore that the genera of thrips which attack these plants are found also only in Australia. However the author is not aware of any leaf-feeding Phlaeothripinae from any other Australian genus of

Legume. Apparently the evolution of these thrips has not been along lines of botanical affinity, but has involved the filling of a series of ecological niches. This is probably inevitable in a low rainfall area, where the number of available host-species which are perennial and have reasonably broad leaves is rather limited. Leaf-feeding and leaf-rolling Phlaeothripinae are common on mesophytic plants of the high rainfall areas of Eastern Australia where they form a complex of species and genera, related to *Teuchothrips*, which extends into the Indonesian region. In order to colonize the drier parts of Australia, thrips have had to adapt to *Acacia* species on more than one occasion, and this has given rise to a series of groups restricted to *Acacia* trees. The Phlaeothripinae which have colonized other plants of the low rainfall areas such as *Casuarina*, *Geijera* and *Pittosporum* are not closely related to the *Acacia*-living species.

The insect order Thysanoptera is divided into two sub-orders, the Terebrantia in which the females have an ovipositor, and the Tubulifera in which there is no ovipositor and the last abdominal segment is produced into a tube. Many of the genera of Terebrantia in Australia can be recognized by use of Priesner's key to the genera of the world (1949), although only one small family, the Aeolothripidae, has been studied systematically (Mound, 1967). However the genera of the Tubulifera, in which only one family, the Phlaeothripidae, is recognised, are much more difficult. This is because so few species have been described that the available genera are poorly defined, and moreover there are far too few genera available for the numerous species that can be found. There are two sub-families in the Phlaeothripidae, the Megathripinae which have broad band-like maxillary stylets and feed on fungal spores, and the Phlaeothripinae which have slender stylets and feed on the tissues of higher plants, or on fungal hyphae, or rarely on other Arthropods (see Stannard, 1968). The Australia/New Guinea region is rich in Megathripine species but these are less readily collected than the numerous species of the Phlaeothripinae.

The present work is part of an attempt to provide a generic framework for the Australian Thysanoptera. The Phlaeothripine species living on *Acacia* trees have been treated separately because they are reasonably isolated systematically, probably on account of the ecological situation discussed above, and also because they are a major element in the thrips fauna over much of Australia. The genera discussed here fall mainly in the sub-tribe Kladothripina of the tribe Hoplothripini (Priesner, 1960), although the four species of *Empresmothrips* are of doubtful affinity. This sub-tribe is polyphyletic in the present author's opinion, and has been derived from leaf-feeding species of the Hoplothripina in the *Teuchothrips*/*Liothrips* complex of genera. Many of the species in this complex produce leaf-rolling galls e.g. *Tolmetothrips*, *Eugynothrips*, *Eothrips*, and in view of the morphological similarities it is reasonable to consider that the gall-forming Kladothripina have been derived from this stock. The author's views on the relationships of the various genera discussed in this paper are summarized in Text-figure 1 and referred to at length after each generic definition.

GALL-FORMATION. The process of gall-formation on *Acacia* trees has been discussed by Froggatt (1927) and more recently by the present author (Mound, 1970,*b*) but little is known of the very early development of a gall. Apparently an enation develops rapidly on a phyllode in response to an adult feeding on the surface. The adult remains within the hollow enation and is then sealed into it as the lips of the gall meet overhead. Eggs are then freely deposited over the inner surface of the gall, although *K. rugosus* lays its first eggs close up to the lips of the gall on *A. pendula*. In several species the inter-segmental membranes of the abdomen become greatly distended in ovipositing females and such individuals are apparently able to lay more than one hundred eggs. Eventually, possibly as a result of two or more generations, a gall with an internal diameter of less than one centimetre may contain several hundred adult thrips. Several Lepidoptera and Diptera live as inquilines in these galls, and all four species of *Koptothrips* are apparently inquilines. *Csirothrips* and *Grypothrips* species probably only enter galls that have been attacked and the contents destroyed by lepidopterous caterpillars. A list of the *Acacia* species from which thrips galls have been reported is given in Mound (1970*b*), and a summary of the host records of Phlaeothripinae on *Acacia* trees is given below in Table II at the end of the descriptive text. Several Phlaeothripine species live in the mines of lepidopterous larvae in phyllodes, and both these and other species may be found breeding between pairs of tied phyllodes.

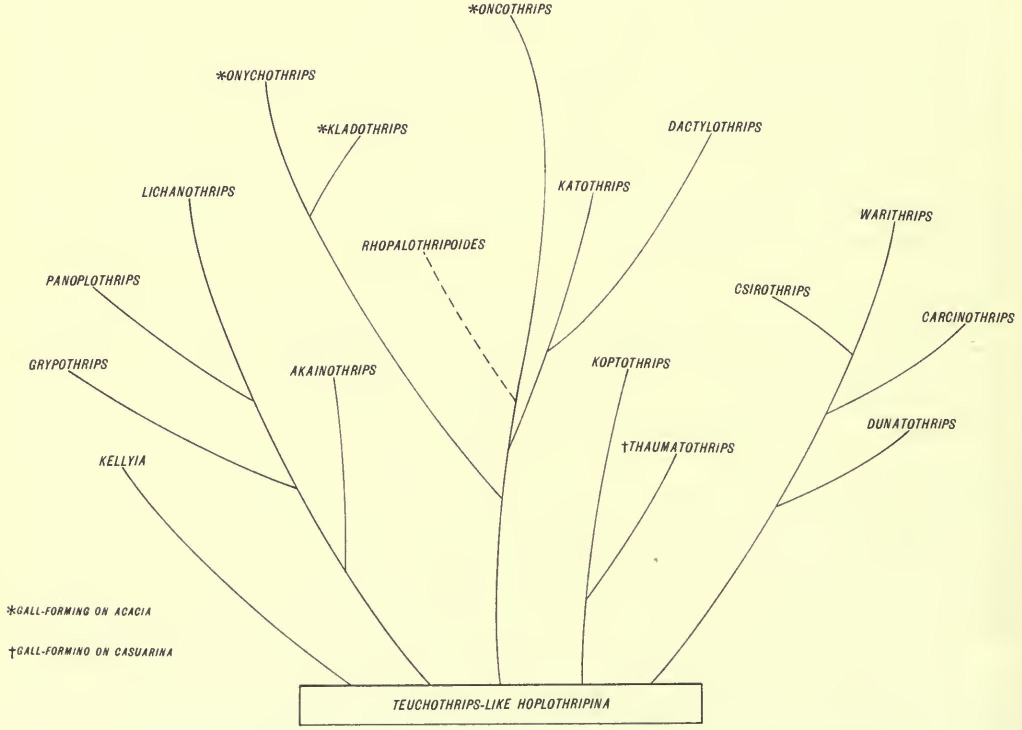
Morphological Variation. One of the most difficult problems in the present work has been the great range of variation shown by some species. The largest specimen of *Grypothrips mantis* for example is almost twice as long as the smallest, and this is accompanied by remarkable differences in body shape (Text-figs 18 & 19). Similar differences occur in *Katothrips tityrus* (Text-figs 23 & 24), whilst the differences between micropterous and macropterous *Oncothrips tepperi* are very confusing. On the other hand *Oncothrips rodwayi* is a relatively stable species although the postocular setae may be present or absent for no apparent reason. These difficulties are reflected in the number of synonyms listed here for any given species, the present author having had the benefit of studying relatively extensive collections which frequently included the different forms of a species from the same gall or collecting site.

Acknowledgements. Most of the material studied here was collected during a year's study leave from the British Museum (Natural History). Generous assistance was provided during this collecting tour by C.S.I.R.O. Division of Entomology, the Waite Institute, and the Queensland and Victoria Museums. Collections have also been made available by the Australian National Insect Collection (ANIC), CSIRO, Canberra; the California Academy of Sciences, San Francisco; the Queensland Museum, Brisbane; the Waite Agricultural Research Institute, Adelaide; the Naturhistoriska Riksmuseum, Stockholm; and Professor Dr H. Priesner of Linz, Austria. I am grateful to my assistant Mr B. R. Pitkin who drew most of the Text-figures, to Mr Arthur Smith who drew Text-figures 47–49 and 102, and also to Miss M. Steel who prepared most of the material for study and drew Text-figure 1.

Techniques. The material listed below under each species is mounted in balsam on microscope slides, although a number of specimens of the commoner gall-forming species remain in alchool. The author prefers to collect thrips into a low concentration of alcohol (50–60%), or into AGA (60% alcohol–10 parts; glycerine–1 part;

acetic acid–1 part), as these fluids cause most specimens to become distended and remain relaxed and soft. The AGA must be removed by washing for several hours in 60% alcohol, and black or very dark specimens may need to be bleached in cold 5% sodium hydroxide solution, although this damages the wings. Dehydration is best carried out through a progression of alcohols to absolute alcohol in the minimum effective time, and to facilitate this it is usually necessary to pierce the body in several places. Clove oil is a very convenient clearing agent before the specimens are placed in balsam as it tolerates small traces of water. Specimens mounted in one of the water-soluble mountants such as Berlese, Swanns or Hoyers are frequently inadequate for critical study. These media, particularly if preceded by caustic potash treatment, often cause antennal segments and the apices of some expanded setae to collapse. Water soluble mountants shrink to a greater extent than balsam as they dry and this often distorts the head shape due to pressure from the cover glass.

TERMINOLOGY. Many of the characters used in the keys and descriptions below are based on recent work on the Thysanoptera, particularly L. J. Stannard (1957). The praepectus or praepectal plates are the anterior sclerites of the prosternum (not to be confused with the cervical sclerites), which are well developed in *Csirothrips* (Text-fig. 6) but are absent in *Akainothrips* (Text-fig. 2). The probasisternal plates are the posterior prosternal sclerites, which are greatly enlarged in some *Lichano-*



*ONCOTHRIPS
*ONYCHOTHRIPS
*KLADOTHRIPS
DACTYLOTHRIPS
LICHANOTHRIPS
KATOTHRIPS
WARITHRIPS
RHOPALOTHRIPOIDES
PANOPLOTHRIPS
CSIROTHRIPS
CARCINOTHRIPS
GRYPOTHRIPS
AKAINOTHRIPS
KOPTOTHRIPS
DUNATOTHRIPS
KELLYIA
†THAUMATOTHRIPS
*GALL-FORMING ON ACACIA
†GALL-FORMINO ON CASUARINA
TEUCHOTHRIPS-LIKE HOPLOTHRIPINA

FIG. 1. Inter-relationships of some Australian Phlaeothripine genera.

thrips species (Text-fig. 65). The mesopraesternal plates are the anterior sclerites of the mesosternum, which are frequently reduced to two lateral triangles. Duplicated cilia of the fore wing occur in many genera on the distal posterior margin of the fore wing. The term 'pronotal shield' is used here to distinguish the dorsal sclerite of the pronotum, because 'pronotal width' is sometimes confused with the width across the fore coxae. The maxillary bridge is well known in the flower- and grass-living genus *Haplothrips*, it is a chitinous connection between the so-called maxillary guides which underlie the stylets and probably provide muscle attachments. It should be noted that in none of the genera treated here are the fore wings constricted medially as in the common flower-living Tubulifera of the genus *Haplothrips*, and in the gall-living species of *Euoplothrips* on *Smilax*.

Key to the Genera of Phlaeothripinae from *Acacia* Trees

1 Abdominal sternites with at least 6 pairs of marginal setae, in ♀ these setae form lateral combs longer than each sternite, in ♂ the setae are short and inconspicuous; dorsal pair of terminal setae on tube black and stout at base, twice as long as remaining terminal setae; antennals III & IV with three sense cones, V & VI ventrally with a group of about 10–20 short sense hairs (Text-figs 98–101); cheeks each with one stout seta in basal third.

Fore tarsi without a tooth; wings broad, duplicated cilia present (Text-fig. 102); large species in tied phyllodes on *A. harpophylla* . ***XANIOTHRIPS*** (p. 457)

– Abdominal sternites with no more than three pairs of marginal setae; apex of tube usually with three pairs of setae approximately equal to each other in length; antennals V & VI without a ventral group of specialized sensory hairs . . 2

2 Fore wings well developed, without duplicated cilia on distal hind margin.

Praepectus well developed (Text-figs 6, 95); head with several stout setae on the cheeks; cheeks projecting weakly behind eyes, narrowed to base but without constricted neck; maxillary stylets not deeply retracted into head; postocular setae never reduced; antennal III with one sense cone, IV with three sense cones . 3

– Fore wings absent or reduced; or fore wings present with several duplicated cilia on distal hind margin; or if fore wings present but without any duplicated cilia, then head without stout cheek setae 5

3 Fore femur massive, extending beyond head, inner apex produced into three large teeth; cheek setae about one third as long as head width (Text-fig. 7) ***CARCINOTHRIPS*** (p. 398)

– Fore femur not extending beyond head; cheek setae shorter 4

4 Fore femur without tubercles on inner margin; cheek setae stout, set on distinct tubercles; eyes bulging, half as long as cheeks (Text-fig. 6); glandular area of ♂ restricted to sternite VIII . . . . . . ***CSIROTHRIPS*** (p. 398)

– Fore femur of female with a series of tubercles on inner margin; cheek setae weaker; eye length not half of cheek length (Text-figs 91–95); glandular area on sternite VIII of ♂ extends on to lateral quarters of tergite VIII . ***WARITHRIPS*** (p. 453)

5 Antennal IV with two sense cones, III with one sense cone 6

– Antennal IV with three or four sense cones, III with one or two sense cones . . 12

6 Fore femur with stout median spur.

Praepectus present; fore wing without duplicated cilia; head projecting in front of eyes, a distinct tooth posterior to eyes (Text-fig. 11); tube of ♀ shorter than tergite IX, tube of ♂ normal . . . . . ***DUNATOTHRIPS*** (p. 400)

– Fore femur without median spur or tubercle 7

7 Tergites with a pair of longitudinal sutures mesad of wing retaining-setae; wing-retaining setae often on large finger-like tubercles.
Head reticulate, anterior margin triangular, postocular setae not developed (Text-fig. 12); fore wing without duplicated cilia; praepectus present or absent; tube frequently not tubular . . . . . . ***DACTYLOTHRIPS*** (p. 400)

– Tergites entire, without longitudinal sutures mesad of wing-retaining setae; wing-retaining setae in normal position 8

8 Pronotal shield longer than wide, replaced by a membranous area laterally (Text-fig. 43); tube less than 0·75 as long as head; forming galls on *A. doratoxylon*. ***Kladothrips augonsaxxos*** (p. 422)

– Pronotal shield clearly wider than long, or, if as long as wide, then the tube is longer than the head 9

9 Fore tibia with a tubercle at inner apex.
Tarsal tooth larger in ♀ than in ♂; pronotal anteromarginal setae not developed; maxillary stylets close together in middle of head, retracted to postocular setae (Text-figs 80, 82); forming galls on *A. aneura* . . ***ONYCHOTHRIPS*** (p. 446)

– Fore tibia without an apical tubercle (rarely an extreme oedymerous ♂ of *Rhopalothripoides* has a small tibial tubercle but in that genus the pronotal anteromarginal setae are as large as the anteroangulars) 10

10 Apterous; pelta more than twice as wide as long; anteromarginal setae as large as anteroangulars; tarsal tooth of ♀ hardly developed, of ♂ well developed (Text-figs 84–88); in leaf-glands of bipinnate *Acacia* species ***RHOPALOTHRIPOIDES*** (p. 450)

– Macropterous to micropterous; pelta triangular; anteromarginal setae usually absent (present in *O. antennatus*); fore tarsal tooth of female large . . . 11

11 Tube beehived-shaped, constricted apically (Text-fig. 27); fore wing duplicated cilia absent, or wings reduced; sense cone on antennal III ventral (Text-fig. 35) ***Katothrips hyrum*** (p. 414)

– Tube normal; fore wing with duplicated cilia, or wing reduced; sense cone on antennal III lateral; gall-forming species . . . ***ONCOTHRIPS*** (p. 439)

12 Fore wings without duplicated cilia, or wings not fully developed . . . 13

– Macropterous, fore wings with duplicated cilia 14

13 Antennal III with two sense cones, IV with four sense cones; antennal VII not constricted at base (Text-figs 14 & 15); fore tibia without apical tubercle; maxillary stylets close together in middle of head (Text-fig. 13) ***EMPRESMOTHRIPS*** (p. 400)

– Antennal III with one ventral sense cone, IV with three sense cones; antennal VII usually constricted at base (Text-figs 33–37); fore tibia often with small apical tubercle; stylets not meeting in middle of head, maxillary bridge developed (Text-figs 23–25 & 30–32) . . . . ***KATOTHRIPS*** (p. 409)

14 Pronotal shield slender, longer than wide, replaced by membranous area laterally (Text-figs 41 & 48); gall-forming species . . . ***KLADOTHRIPS*** (p. 420)

– Pronotal shield wider than long 15

15 Maxillary stylets wide apart, arranged in a V-shape, almost restricted to mouth cone.
Pronotal setae very reduced (Text-figs 65–67); navicula of male genitalia with an acute apex; large species with very broad wings, in tied phyllodes on *Acacia harpophylla*. . . . . ***LICHANOTHRIPS*** (p. 434)

– Maxillary stylets retracted into head, not V-shaped 16

16 Cheeks with at least one pair of stout setae in basal third.
Maxillary bridge well developed (Text-fig. 2); tarsal tooth absent in ♀, present in ♂ . . . . ***AKAINOTHRIPS*** (p. 395)

– Cheeks without stout setae near base, but sometimes with several pairs of fine setae 17

17 Maxillary stylets close together in middle of head; praepectal plates absent . . 18

– Maxillary stylets wide apart, not approaching each other within head; praepectus present or indicated by a group of dark coalesced chitinous islets . . . 19

18 Maxillary stylets retracted to in front of hind margin of eyes (Text-fig. 10); antennal III about four times as long as wide; ♂ with glandular area on sternite VIII; inquilines in Hymenoptera galls . . . . ***KELLYIA*** (p. 416)

– Maxillary stylets retracted to postocular setae (Text-figs 50–53); antennal III less than twice as long as wide; ♂ without sternal glandular areas; inquilines in thrips galls . . . . ***KOPTOTHRIPS*** (p. 427)

19 Postocular setae not developed (Text-fig. 30); antennal III less than twice as long as wide, sense cone on ventral surface (Text-fig. 34) ***Katothrips duplex*** (p. 413)

– Postocular setae long; antennal III more than three times as long as wide, sense cone lateral; large black species with long head, in Lepidoptera leaf-mines (Text-figs 16–22) . . . . ***GRYPOTHRIPS*** (p. 404)

AKAINOTHRIPS gen. n.

Type-species: *Adiaphorothrips citritarsus* Girault.

Brown macropterous species of Phlaeothripinae. Head longer than wide, eyes larger on dorsal than on ventral surface, cheeks with at least one pair of stout setae near the base; maxillary bridge well developed, stylets wide apart; mouth cone short and rounded; postocular setae sometimes not developed. Antennae eight-segmented, VIII not constricted at base; IV with three sense cones, III with one sense cone. Pronotum transverse, anteromarginal setae not developed; epimeral sutures complete; praepectus absent, mesopraesternum reduced to two triangular plates. Fore femur moderately swollen in ♀ and small ♂, greatly swollen in large ♂; fore tibia weakly drawn out at apex in large male; fore tarsal tooth absent in ♀, present in ♂. Mesonotal midlateral setae developed; metanotum reticulate medially, median setae small. Fore wings parallel-sided, duplicated cilia present. Pelta longer than wide; two pairs of sigmoid wing-retaining setae on tergites II–VII; sternites with transverse row of accessory setae; male without glandular area on VIII; tube shorter than head, terminal setae long and dark.

The presence of a maxillary bridge in the type-species of this new genus suggests a relationship with the Haplothripini, and an extreme gynaecoid male of *citritarsus* strongly recalls the genus *Haplothrips*. However praepectal plates are well developed in the *Haplothripini* and the fore wings are clearly constricted medially. Moreover *Haplothrips* and its relatives do not have stout cheek spines, and the apex of the male phallus is slender and well chitinized to form the pseudovirga. The apex of the phallus of *Akainothrips citritarsus* is soft and sack-like as in species of the Phlaeothripini and Hoplothripini. Stout cheek spines are commonly found in species of the Phlaeothripini, but *Akainothrips* has the maxillary stylets wide apart with a well developed bridge, antennal segment eight is not constricted at the base, and the cuticle is not strongly reticulate as in most members of that tribe. However, the maxillary bridge is variable in the genera of the sub-tribe Kladothripina of the tribe Hoplothripini, and although members of this tribe usually have smooth cheeks *Akainothrips* has more characters in common with the Hoplothripini than any other group of the Phlaeothripinae. *Teuchothrips simplicipennis* Hood, the type-species of Teuchothrips, has a weakly developed maxillary bridge but has a short head with no cheek setae. Other members of the *Teuchothrips* complex in Australia, including *Rhynchothrips annulosus* Priesner, are related to *Akainothrips* but require further study. The generic name is derived from a Greek word for a thorn, in reference to the cheeks.

Akainothrips citritarsus (Girault) **comb. n.**

(Text-figs 2, 3 & 8)

Adiaphorothrips citritarsus Girault, 1928 (40) : 2.

Girault described *citritarsus* from two specimens which originally formed part of the type-series of *Adiaphorothrips clavisetae* Girault, 1926. The description of *clavisetae* refers to a male and four females, and the description of *citritarsus* refers to 'two females with the male types of *clavisetae*'. The original slide bears five specimens but these represent four, not two, species. Two males and a female agree with the description of *clavisetae* in having a fore tibial tubercle. These are referred to here under *Grypothrips*, the males being *mantis* Karny although the female is a distinct species. One specimen, a female, agrees with the description of *citritarsus* in having long postocular setae, and this is here designated as the LECTOTYPE of that species. But the fifth specimen lacks postocular setae, has closely approximated stylets, and is probably related to *Rhynchothrips annulosus* Priesner.

The lectotype of *citritarsus* differs from the other specimens which have been studied, in having only a single pair of stout cheek setae. The species has been collected in company with *Grypothrips mantis* in lepidopterous leaf-mines and split stems on *Acacia* trees. Two specimens were also collected in tied leaves in company with the species of *Xaniothrips* and *Lichanothrips* described below. It is interesting to note that the sexes were collected in almost equal numbers, whereas females apparently predominate in many species of Phlaeothripinae.

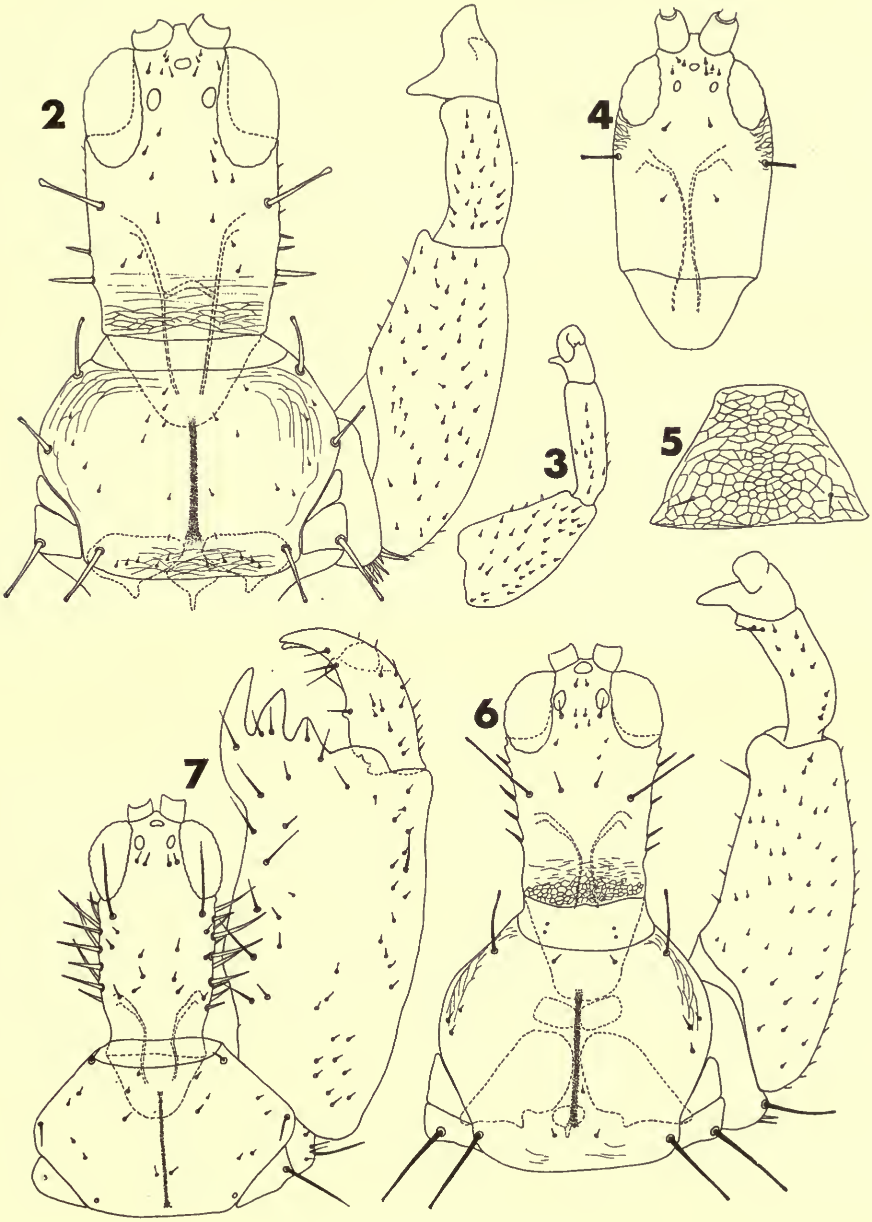
♂ macropterous. Colour brown; all tarsi yellow, also yellow on basal half of antennals III–VII, and base and apex of fore tibia; trochanters and base of mid and hind tibiae lighter than rest of legs (three specimens from Queensland have more extensive yellow markings on tibiae); fore wings pale, cilia dark; major setae, including cheek setae, pale; terminal setae of tube dark.

Head with transversely anastomosing lines of faint sculpture; postocular setae well developed (Text-fig. 2). Pronotum and fore legs differ in size considerably between oedymerous and gynaecoid individuals, fore femora with several short stout setae on inner margin. Sub-basal wing setae B_1 and B_2 stout with expanded apices, B_3 slender and acute. Apex of pelta varies from roundly acute to transverse; tergal posteroangular setae well developed, more than half as long as marginal B_1 on tergite III.

Measurements (in microns) of an oedymerous ♂ from Canberra with a small ♂ bearing same data in parentheses. Body length 2650 (1900). Head, length 336 (255); width behind eyes 215 (170); postocular seta 58 (32); longest cheek seta 40 (26). Pronotal shield, length 220 (135); median width 310 (225); epimeral seta 100 (55). Mesonotal midlateral seta 45. Metanotal median seta 35. Fore wing, length 1080 (800); distal width 90 (65); sub-basal setae 65, 70, 55 (30, 30, 40); number of duplicated wing cilia 13 (8). Tergite IX, B_1 155 (100); B_2 155 (97); B_3 145 (106). Tube, length 160 (130); terminal setae 320 (240). Antennal segments length, 26; 50; 71; 83; 80; 68; 58; 32 (26; 42; 55; 58; 58; 50; 47; 29).

♀ macropterous. Colour and structure similar to male, but although size range is great, females are never oedymerous, i.e. pronotum and fore legs of largest females are not greatly swollen. Fore tarsi without a tooth; tergite IX seta B_1 shorter than B_2. Postocular setae very short in specimens from Canberra and two females from Queensland, but well developed in the holotype and 10 ♀ from Walgett, N. S. W.

Measurements (in microns) of one female from Canberra. Body length 2500. Head, length 320; width behind eyes 210; postocular seta 16; longest cheek seta 32. Pronotal shield, length 155; median width 260; epimeral seta 75. Tergite IX, B_1 100; B_2 138; B_3 138. Tube, length 165; terminal setae 300.



FIGS 2–7. 2 & 3. *Akainothrips citritarsus*: 2, head, pronotum and fore leg of large male. 3, fore leg of small male. 4. Head of *Empresmothrips longfellowi*. 5 & 6. *Csirothrips watsoni*: 5, pelta. 6, head, pronotum and fore leg (praepectus and probasisternum dotted). 7. *Carcinothrips leai:* head, pronotum and fore leg.

MATERIAL STUDIED. LECTOTYPE ♀. QUEENSLAND: Dalby, in forest, 10.ii.1924 (*A. Girault*), in Queensland Museum.

AUSTRALIAN CAPITAL TERRITORY: Canberra, Black Mountain; 5 ♀, 6 ♂ on *Acacia longifolia*, 21.i.1964 (*E. M. Reed*), in ANIC; 4 ♀, 4 ♂ in leaf mine on *Acacia implexa*, 7.iv.1968 (*L. A. Mound* 624), in BMNH. NEW SOUTH WALES: 15 miles north east of Walgett, 10 ♀, 12 ♂ in stem-splits (? galls) on *Acacia stenophylla*, 5.vi.1968 (*L. A. Mound* 663), in BMNH. QUEENSLAND: 50 miles south west of Dalby, 1 ♀, 1 ♂ in tied phyllodes of *Acacia harpophylla*, 16.vii.1968 (*L. A. Mound* 734); 5 miles north of Goondiwindi, 1 ♀ on *Acacia ?harpophylla*, 16.vii.1968 (*L. A. Mound* 726), in BMNH.

CARCINOTHRIPS Moulton

Carcinothrips Moulton, 1929 : 264. Type-species: *C. leai* Moulton, by monotypy.

Moulton erected this genus for a single species based on a unique female. The only known genera to which *Carcinothrips* can be related are the new genera *Csirothrips* and *Warithrips* described below. These three genera are unusual in the Phlaeothripinae in having a very well defined praepectus but lacking duplicated cilia on the broad fore wings. This combination of characters is also found in *Dunatothrips* and some species of *Dactylothrips*. The present tribal classification (Priesner, 1960) does not readily accept these forms, although they are probably derived from the Hoplothripini.

Carcinothrips leai Moulton

(Text-fig. 7)

Carcinothrips leai Moulton, 1929 : 264–266.

Contrary to the original description, the fore tarsi are quite well developed, complete with a blunt tooth, but protrude ventrally into a lower focal plane on the unique holotype slide. There are three sense cones on antennal segment four, one sense cone on segment three, and the pore on segment two is close to the apex.

It is difficult to see how the grossly enlarged fore femora are moved, because the prothorax is relatively small. There are well developed muscles in each fore femur with a strong tendon entering the fore tibia, and so the front legs are most probably raptorial in function. However it is unlikely that the species is predatory as any prey held in the front legs would be well out of reach of the mouth parts.

MATERIAL STUDIED. Holotype ♀. SOUTH AUSTRALIA: Barton, [on *Acacia* sp. in September] (*A. M. Lea*), in California Academy of Sciences.

CSIROTHRIPS **gen. n.**

Type-species: *Csirothrips watsoni* sp. n.

Large dark macropterous species of Phlaeothripinae. Head longer than broad, narrowed to base; eyes large, cheeks with a small tooth behind eyes, eight or more pairs of stout cheek setae arising from small tuberculate bases; postocular setae well behind eyes; ocellar region weakly elevated beyond base of antennae; maxillary stylets retracted as far as postocular setae, almost meeting in middle of head; mouth cone short and rounded, maxillary palps small. Antennae eight-segmented, III with 1 sense cone, IV with 3 sense cones; pore on II in apical half. Pronotum massive, epimeral sutures complete; anteromarginal and midlateral setae not developed, major setae not acute at apex; praepectus well defined; probasisternum large, mesopraesternum reduced to two lateral triangles; fore femora massive, fore tibia stout with small apical tubercle, fore tarsus with a stout tooth which is larger in ♀ than in ♂. Meso- and metanota reticulate; fore wings broad, cilia closely set, no duplicated cilia; sub-basal seta B_1 small, B_2 and B_3 well developed. Pelta reticulate, rectangular with anterior border shorter than posterior; tergites II–VII with two pairs of sigmoid wing-retaining setae; marginal setae on IX long; tube almost as long as head, constricted near apex, apical setae black and longer than tube. Sternites with irregular transverse row of at least 20 accessory setae; sternites III–VII laterally with paired areas of elongated reticulations possibly associated with glands in female. Male with large glandular area on sternite VIII; B_2 on IX short and stout.

This genus is discussed above under *Carcinothrips*. The majority of Phlaeothripine genera in which the praepectus is developed but the fore wings lack duplicated cilia include weakly sclerotized species inhabiting leaf-litter. In those forms however the fore wings are rather slender and the cilia widely spaced, not at all like the broad, closely ciliate wings of *Csirothrips*. The genera most closely related to this new genus are all Australian, *Carcinothrips*, *Warithrips* and *Dunatothrips*. *Dunatothrips* and *Dactylothrips* both have less heavily sclerotized though still broad wings, and in *Dactylothrips* the praepectus is weak and not always developed. The generic name is based on the initial letters of the Commonwealth Scientific and Industrial Research Organisation in recognition of the assistance they provided for this study.

Csirothrips watsoni sp. n.

(Text-figs 5, 6 & 9)

♀ macropterous. Colour dark brown to black, thorax paler particularly when immature; tarsi yellow, fore tibiae yellow along inner margin, mid and hind tibiae yellow at base; antennals III–VII yellow at base with increasing dark areas distally towards apex; wings pale, cilia dark; major setae shaded, terminal setae of tube black. With the morphological characters givén in the generic definition above.

Measurements (in microns) of holotype, with small and large paratypes in parentheses. Body length 3800 (3400–5000). Head, length 500 (460–550); width across eyes 320 (300–340); basal width 240 (230–250); postocular seta 160, arising 90 posterior to hind margin of eye; maxillary palps 60. Pronotal shield, length 380 (320–600); median width 510 (470–670); anteroangular seta 80: epimeral seta 160. Median metanotal setae 90, distance apart 130. Fore wing, length 1600; maximum width 230; sub-basal setae 100. Hind tibiae 400 (360–470). Tergite IX, setae B_1 ?(260–350); B_2 260 (260–320); B_3 ?(270–310). Tube, length 390 (380–460); terminal setae 350. Antennal segments length, 50 (40–60); 73 (70–80); 97 (90–110); 80 (80–110); 87 (80–90); 80 (75–90); 65 (65–70); 32 (30–35); sense cone on III 220.

♂ macropterous. Colour a little darker than ♀. Fore legs slender, tarsal tooth not massive.

Measurements (in microns) of allotype. Body length 2700. Head, length 350. Pronotal shield, length 240; median width 420; epimeral seta 100. Tergite IX, B_1 240; B_2 115; B_3 225. Tube, length 290; terminal setae 320.

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: 25 miles SSW of Eulo, in small spherical gall on *Acacia aneura*, 17.x.1968 (*J. A. L. Watson*), in ANIC. The following immature instars were found in the gall with the holotype; I 3; II 11; III 1; IV 6; V 1.

Paratypes. QUEENSLAND: 25 miles SSW of Eulo, allotype ♂ and ♀ with the following immature instars II 9; III 2; IV 2; V 1, in small spherical gall with circular hole on *Acacia aneura*, 17.x.1968 (*J. A. L. Watson*).

NORTHERN TERRITORIES: 50 miles west of Alice Springs, 1 ♀ in spherical gall with circular hole on *Acacia aneura*, 22.x.1967 (*L. A. Mound* 283); Ayers Rock, 1 ♀ in spherical gall on *Acacia aneura*, 24.x.1967 (*L. A. Mound* 289), in BMNH. NEW SOUTH WALES: Sydney, 1 ♀ with 1 fifth instar (*W. W. Froggatt*), in NSW Department of Agriculture. SOUTH AUSTRALIA: Frome Downs Station, 10 miles south of Lake Frome, 1 ♀ with 1 first instar in gall on *Acacia aneura*, 2.iv.1938, in Waite Agricultural Research Institute.

The first and second instars of this species are readily distinguished from those of other gall-inhabiting species by the presence of black areas of chitin at the base of each major seta. This species is not a primary gall-producer, but invades and breeds in the galls of other thrips.

DACTYLOTHRIPS Bagnall

Dactylothrips Bagnall, 1923 : 629–630. Type-species: *D. australis*, by monotypy.
Hannibalia Girault, 1928 (43) : 2. Type-species: *H. priscus*, by monotypy.
Dactylothrips Bagnall; Mound, 1969 : 173–179.

This genus has been redefined and figured recently, with a key to five species. These species probably live on *Acacia* trees in the galls of other insects such as Hymenoptera. *Katothrips* is morphologically similar to *Dactylothrips* and the species apparently have similar cryptic habits. This group is undoubtedly larger than present records indicate, and study of dead galls on *Acacia* trees will yield further species. At present it is not possible to associate males with females of *Dactylothrips* species, and so no males are as yet described of the five known species; *australis* Bagnall (Text-fig. 12); *giraulti* Mound; *marsupium* Mound; *priscus* (Girault); *tasmani* Mound.

DUNATOTHRIPS Moulton

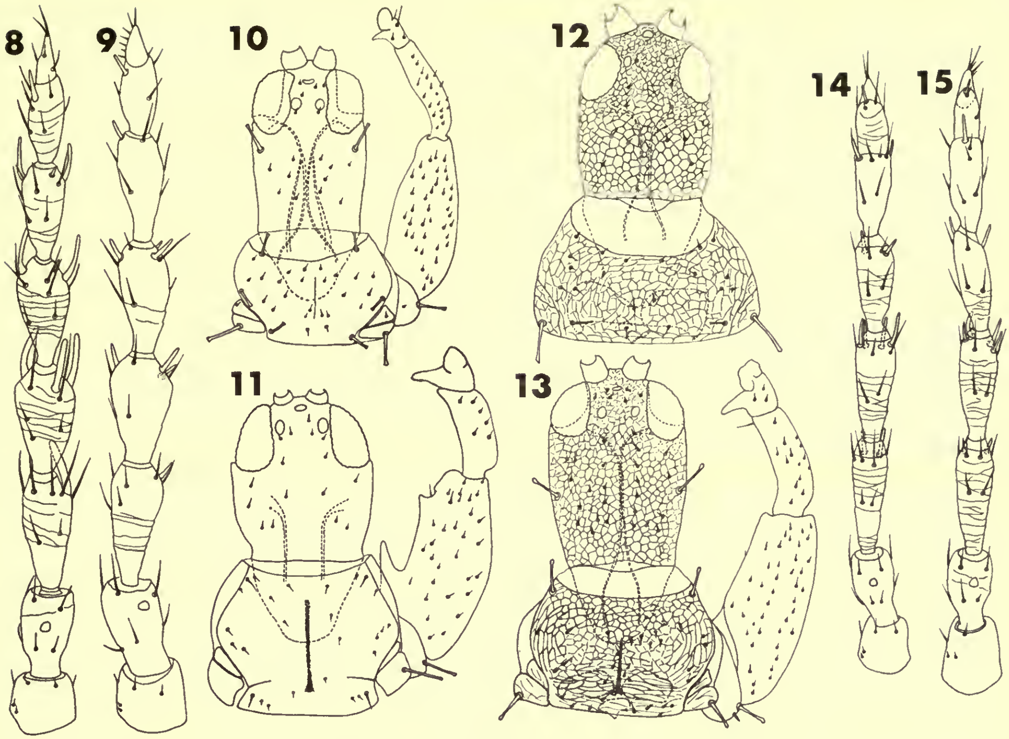
Dunatothrips Moulton, 1942 : 10. Type-species: *D. armatus*, by monotypy.
Dunatothrips Moulton; Mound, 1969 : 179–182.

This genus has been redefined and figured recently, with a second species from Central Australia, west and south of Alice Springs. *D. armatus* is known only from the holotype female (Text-fig. 11) taken at Barton, South Australia, but *aneurae* Mound was observed to have the unusual habit of living in a membranous envelope surrounding apical phyllodes of *Acacia aneura*.

EMPRESMOTHRIPS Karny

Empresmothrips Karny, 1920 : 40. Type-species: *E. combustipes*, by monotypy.
Coenothrips Bagnall, 1924 : 629. Type-species: *C. fallax*, by monotypy. **Syn. n.**
Eucoenothrips Bagnall, 1926 : 553 [*nomen novum* for *Coenothrips*].

Antennae eight-segmented, VI broadly truncate at apex, VII not narrowed at base, closely joined to VIII; III with 2 sense cones, IV with 4 sense cones. Eyes not large, postocular setae



FIGS 8–15. 8 & 9. Antenna: 8, *Akainothrips citritarsus*. 9, *Csirothrips watsoni*. 10–13. Head, pronotum and fore leg: 10, *Kellyia biadenes* female. 11, *Dunatothrips armatus*, female. 12, *Dactylothrips australis*, female. 13, *Empresmothrips fallax*, male. 14 & 15. Antenna: 14, *Empresmothrips fallax*. 15, *Empresmothrips longfellowi*.

well behind eyes, small and expanded at apex; maxillary stylets retracted to eyes, close together in middle of head. Pronotum transverse, anteromarginal seta absent; epimeral sutures complete; praepectus absent; fore tarsal tooth stout, fore tibia not armed. Fore wings without duplicated cilia. Abdominal tergites with two pairs of wing-retaining setae; sternite VIII of male without glandular area.

The species included in this genus are probably fungus-feeders living in dead galls or under bark and dead leaves. They are not primarily related to *Acacia* trees but are treated here because of their resemblance to certain members of the *Kladothrips* group. The two species *combustipes* and *fallax* are closely related and probably derived from one of the groups of thrips which live in leaf-litter, but the relationships of *folii* and *longfellowi* are not clear.

KEY TO THE SPECIES OF *EMPRESMOTHRIPS*

1	Pronotal posteroangular and midlateral setae present	2
–	Pronotal posteroangular and midlateral setae absent	3
2	Prothorax and mesothorax darker than head and metathorax; B1 on tergite IX more than half as long as tube; B2 thorn-like with expanded apex; B3 small and finely acute	***folii*** (p. 403)
–	Prothorax pale, pterothorax dark; B1 on tergite IX about one third as long as tube; B2 slender and expanded; B3 expanded	***longfellowi*** (p. 404)

3 Head yellow, maxillary stylets cross in middle of head; lateral mesonotal setae expanded . . . . ***combustipes*** (p. 402)

– Head brown, maxillary stylets almost meet in middle of head; lateral mesonotal setae not developed . . . . ***fallax*** (p. 402)

E. pallipes Karny, 1925 from Java does not belong in this genus as it has seven-segmented antennae, eleven duplicated cilia on the fore wing and the pronotal anteromarginal setae are well developed.

Empresmothrips combustipes Karny

Empresmothrips combustipes Karny, 1920 : 41.
Empresmothrips combustipes Karny; Karny, 1924 : 24.

The following notes are based on the unique holotype which is either micropterous or apterous. Measurements are given in microns.

♀. Colour yellow on head, metathorax, abdominal segment I, fore legs, mid femora and hind coxae; brown on mid tibiae, and hind tibiae and tarsi, hind femora dark in basal two-thirds; pronotum light brown, anterior of mesothorax darker; abdominal segments increasingly dark to tube; antennals I and II yellow, III–VIII increasingly dark.

Head, length 360; width behind eyes 310; width at base 290; postocular seta 52 long, apex 4 wide. Ocelli reduced; vertex with numerous fine setae pointing mesad, weakly reticulate at base. Pronotum smooth, epimeral sutures complete, anteroangular seta 55, epimeral seta 60. Lateral mesonotal seta, expanded 20 long. Metanotum with numerous fine setae. Pelta reticulate, 230 wide at base, 100 wide at apex; anterior border of tergite II 380–400 wide. Tergites each with transverse row of fine setae; tergite IX B_1 97; B_2 80; B_3 ?90, all expanded at apex. Tube, length 190; width at base 110; apical setae 190.

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: Christmas Creek, November (*E. Mjoberg*), in Riksmuseum Stockholm.

Empresmothrips fallax (Bagnall) **comb. n.**

(Text-figs 13 & 14)

Coenothrips fallax Bagnall, 1924 : 629–630.

♀ macropterous. Colour brown to dark brown, with red hypodermal pigment; tube darkest; mid and hind tarsi light brown, fore tarsi and apex of fore tibiae yellow; antennals I, II, VII and VIII brown, III–VI yellow-brown with brown apices; head and pronotal setae dark with hyaline tips, posterior abdominal setae pale; wings very weakly shaded, sub-basal setae colourless, cilia dark.

Dorsal surface of head faintly but completely reticulate, with about 15 pairs of fine 5μ setae between postocular setae and midline; postocular setae expanded, short (16–23μ), about 65μ behind eyes, sometimes reduced and little distinct from minor head setae; mouth cone rounded, maxillary palps about 40μ, maxillary stylets retracted to eyes and meeting in middle of head. Antennae eight-segmented, VIII closely united with VII by oblique suture; VII broad at base; VI broadly truncate at apex; III and V each with two ventral sense cones, IV with four sense cones (Text-fig. 14).

Pronotum transverse, weakly reticulate with about 15 pairs of minor setae; epimeral sutures complete; anteroangular and epimeral setae stout with expanded apices; praepectus absent; mesopraesternum complete, 200μ wide, rectangular laterally but anterior border eroded sub-medially. Fore femur stout, tibia slender and not armed, fore tarsus with a large tooth; coxal seta similar to epimeral seta. Lateral mesonotal seta not developed; metanotum weakly reticulate with about seven pairs of fine setae. Fore wing not constricted medially, cilia closely set, no duplicated cilia; sub-basal setae poorly developed, ?B_2 15μ, ?B_3 80μ, both setae slender and acute.

Pelta longer than broad; tergites II–VII with two pairs of wing-retaining setae, on II–VI anterior pair much smaller than posterior pair, on VII both wing-retaining setae reduced; marginal seta B_1 close to posterior wing-retaining seta, tergites II–VI B_1 larger than postero-angular tergal seta; tergite IX B_1–B_3 with expanded apices; dorsal surface of tube with about seven longitudinal ridges in basal half, apex weakly constricted. Sternites with median transverse row of about 15 accessory setae 7μ long; sternal marginal setae reduced, median pair 10μ long, about 30μ from posterior margin, one lateral pair near margin 7μ long.

Measurements (in microns) of holotype. Body length (contracted) 2200. Head, length 320; width 240; mouth cone length 130; postocular seta 23. Pronotal shield, length 145; width 320; anteroangular seta 20; epimeral seta 50. Fore wing 1000. Pelta, length 130; basal width 100. Tergite IV, marginal B_1 70; posteroangular seta 35. Tergite IX, B_1 105; B_2 110; B_3 110. Tube, length 225; basal width 110; apical width 48; terminal setae ?170. Antennal segments length, 32; 60; 80; 77; 65; 65; 50; 16.

♂ macropterous. Colour, sculpture and chaetotaxy very similar to ♀, but postocular and pronotal anteroangular setae much longer (Text-fig. 13), and B_2 on tergite IX short. Sternites II–VII with an irregular transverse band of specialized reticulation anterior to the accessory setae, possibly glandular in function. Mesopraesternum boat-shaped but much narrower than in ♀, posterior width 65μ.

Measurements (in microns) of one male from Western Australia. Body length 2400. Head, length 320; width 220; postocular seta 50, distance behind eye 80. Pronotal shield, length 180; width 300; anteroangular seta 50; epimeral seta 30. Fore wing, length 900; median width 180. Tergite IX, B_1 ?100; B_2 55; B_3 165. Tube, length 210; basal width 90; apical width 45; terminal setae 210. Antennal segments length, 35; 55; 80; 77; 65; 65; 50; 16.

MATERIAL STUDIED. Holotype ♀. VICTORIA: Healesville, in flower of *Erythraea australis*, 21.xii.1913 (*A. E. Shaw & R. Kelly*), in BMNH.

AUSTRALIAN CAPITAL TERRITORY: Canberra, Black Mountain; 1 ♀ in gall on *Eucalyptus* branch, 25.v.1961 (*E. M. Reed*); 1 ♂ swept from grasses, 8.xi.1960 (*E. M. Reed*), in ANIC. SOUTH AUSTRALIA: Mt. Crawford State Forest, 1 ♀ swept from grasses and shrubs, 6.viii.1968 (*D. H. Colless*). WESTERN AUSTRALIA: Yanchep, 2 ♀, 2 ♂ on dead *Eucalyptus* leaves on cut branches, 29.ix.1967 (*L. A. Mound* 241), in BMNH.

The sexual dimorphism in this species of the head and pronotal setae and the structure of the mesopraesternum is particularly interesting. A single damaged female of a closely related species but with an unsculptured tube was collected by Froggatt at Euston, New South Wales, 25.ix.1928 and is deposited in the Australian National Insect Collection, Canberra.

Empresmothrips folii Girault

Empresmothrips folii Girault, 1928 (43) : 2.

This species is known from the unique male. Morphologically it is very similar to *longfellowi*, from which it can be distinguished by the characters given in the key. The original description was as follows: 'No accessories. Antennals 7, 8, prothorax, front margin pterothorax, tube, last abdominal, cheeks, antennal 1, black, rest golden. Antennal 3 equal 6, a bit longer than 4. Scutum nearly smooth.'

Material studied. Holotype ♂. Queensland: Taringa, galls on *Tristania* leaf, 1.x.1928 (*A. Girault*), in Queensland Museum.

Empresmothrips longfellowi Girault[1]

(Text-figs 4 & 15)

Empresmothrips longfellowi Girault, 1926 (34) : 1.

The original description states that the species was based on three males, but the only specimen in Girault's collection in the Queensland Museum is a female and this is labelled in the original author's hand as 'Type'. This specimen is here designated as LECTOTYPE. The following redescription is based on a male collected recently in Brisbane.

♂ hemimacropterous. Colour mainly yellow; light brown on anterior and lateral margins of head, external margins of fore femora, antennals I, II, VII and VIII, and apices of III–VI; dark brown on pterothorax, abdominal segments I and VIII–X, and basal half of hind tibiae. Wings clear, cilia dark. Major setae pale except postoculars and wing-retaining setae.

Anterior margin of head almost oval, projecting weakly in front of eyes, cheeks rounded to base; postocular setae broadly expanded (Text-fig. 7); maxillary stylets retracted almost to eyes, close together in middle of head; mouth cone short and rounded; antennal V asymmetric at apex, VII weakly narrowed at base (Text-fig. 15).

Pronotal midlateral and posteroangular setae small and slender but expanded at apex, 23μ long; pronotum apparently smooth, median thickening weak; mesopraesternum wide but slender. Mesonotal lateral setae expanded 16μ long; metanotum reticulate with about 5 pairs of fine setae. Fore wing sub-basal setae B_1 and B_2 expanded, 20μ long; B_3 fine and acute, 60μ long.

Pelta reticulate broad at base, 100μ long, 160μ wide. Tergites II–V with two pairs of sigmoid wing-retaining setae, these setae reduced on VI and VII. Posteroangular setae as long as marginal setae. Tergite IX marginal setae all expanded; tube evenly narrowed to apex. Sternites with a transverse row of about 15 accessory setae 10μ long; sternal marginals about 25μ long, median pair wide apart about 20μ from posterior margin; sternites II–VII with a pair of specialized reticulate areas in front of accessory setae.

Measurements (in microns). Body length 2500. Head, length 80; width 52; postocular setae 40, distance behind eye 50. Epimeral seta 40. Fore wing, length 550; width 65. Tergite IX, B_1 65; B_2 50; B_3 80. Tube, length 200; basal width 80; apical width 40; terminal setae 210. Antennal segments length, 50; 55; 110; 70; 65; 65; 45; 16.

Material studied. LECTOTYPE ♀. Queensland: Wynnum, forest (*A. Girault*), in Queensland Museum.

Queensland: Brisbane, Mt. Nebo, 1 ♂ on *Acacia* sp. with pinnate leaves, 27.vii.1968 (*L. A. Mound* 792), in BMNH.

GRYPOTHRIPS Karny

Grypothrips Karny, 1924 : 27–28. Type-species: *G. mantis* by monotypy.

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[1] While this paper was in press, the type-series of *Asemothrips picturatus* Hood, 1919 was studied in Washington and found to represent the same species as *longfellowi*. **Syn. n.**

Elongate, macropterous, dark species of Phlaeothripinae. Head long, in large individuals more than twice as long as wide; eyes large, anterior ocellus directed forwards; cheeks narrowed to base with several fine setae; mouth cone short and rounded, genae very strongly expanded in large specimens. Antennae arising on anterior margin of head, eight-segmented; III with one sense cone, IV with three sense cones; VIII very short closely united with VII. Pronotum broad, epimeral sutures complete; anteromarginal setae reduced, epimerals longer than other major setae; praepectus indicated by a deeply shaded group of fused chitinous islets: probasisternal plates large, each with stout posterior process; mesopraesternum reduced to two triangular sclerites. Both sexes with fore femora expanded except in gynaecoid individuals; fore tibia with apical tubercle, fore tarsal tooth as long as tarsal width. Mesonotal midlateral seta expanded; metanotum reticulate, median setae small. Fore wings with almost parallel sides, closely ciliate with 20–30 duplicated cilia; sub-basal setae B_2 and B_3 expanded, B_1 absent but an additional slender seta present posterior to B_3. Pelta reticulate, wider than long; tergites II–VI with two pairs of sigmoid wing-retaining setae, and anterolateral to these 2–4 pairs of accessory sigmoid setae; wing-retaining setae on VII reduced; tergite IX with B_1 and B_2 shorter than tube in both sexes; terminal setae black, longer than tube; sternite VIII of ♂ *mantis* with large glandular area.

Definition of this genus is complicated by the great range of size, and related variation in proportions, shown by the type-species *mantis*. The genus resembles the Kladothripina in the sense cone formula of the antennae and the armed fore tibiae and tarsi. However it does not appear to be on the same evolutionary line as the gall-forming *Kladothrips* or *Oncothrips* species, but is probably independantly derived from *Teuchothrips*-like ancestors. A similar long narrow head occurs in *Sacothrips* Moulton, 1968, but that genus has three or four sense cones on segment three, and four sense cones on segment four of the antennae. *Lichanothrips*, which is described below, has much broader fore wings and the maxillary stylets are very low in the head. The relationships of these genera are discussed under *Lichanothrips*.

Grypothrips mantis lives in leaf-mines of Lepidoptera, but has also been found beneath the cuticle of split young stems and as a secondary species within galls on *Acacia* trees. It is possible that this cryptic habit foreshadows the gall-forming habit of other Kladothripina. *Csirothrips*, *Warithrips* and *Dunatothrips* may also have a similar relationship with Lepidoptera, but these genera can be distinguished by a well developed praepectus and the absence of fore wing duplicated cilia.

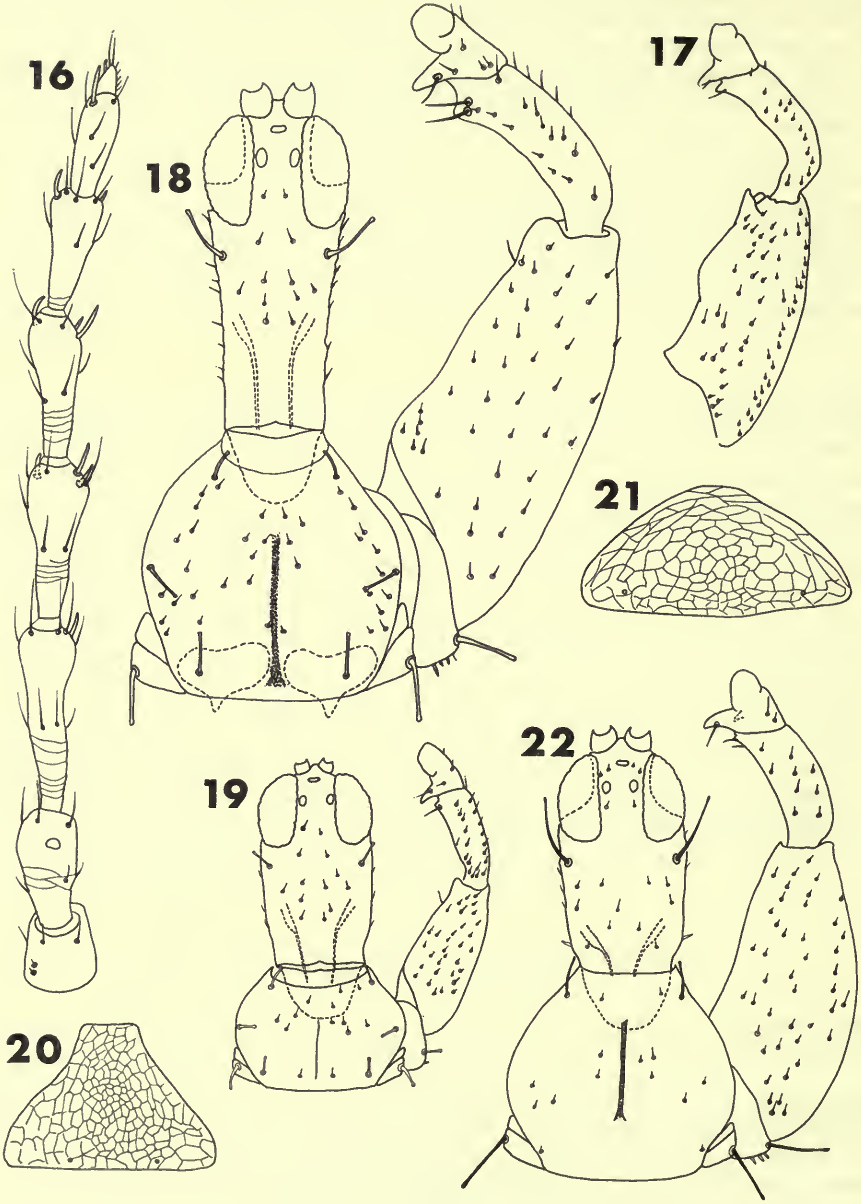
KEY TO THE SPECIES OF *GRYPOTHRIPS*

1 Tergite IX with B_1 and B_2 both expanded at apex; B_1 short, less than two-thirds as long as tube; fore tibial tubercle not at extreme apex of tibia (Text-fig. 18) **mantis** (p. 408)

– Tergite IX with B_1 acute at apex, more than two-thirds as long as tube; fore tibial tubercle at extreme apex of tibia close to fore tarsal tooth 2

2 Fore femur brown, apex broadly rounded; metanotum not reticulate between median setae but heavily reticulate in posterior half; B_1 and B_2 on tergite IX both acute and almost as long as tube; cheeks with a stout seta just in front of basal neck (Text-fig. 22) . . . . **clavisetae** (p. 407)

– Fore femur yellow with brown external margins, with a stout tooth near inner apex (Text-fig. 17); metanotum reticulate medially as well as at posterior; B_2 on tergite IX expanded at apex; cheeks without a stout basal seta . . . **curiosus** (p. 407)



FIGS 16–22. 16 & 17. *Grypothrips curiosus*: 16, antenna. 17, fore leg. 18–20. *Grypothrips mantis*: 18, large female. 19, small female. 20, pelta. 21 & 22. *Grypothrips clavisetae*: 21, pelta. 22, head, pronotum and fore leg.

Grypothrips clavisetae (Girault) **comb. n.**

(Text-figs 21 & 22)

Adiaphorothrips clavisetae Girault, 1926 (34) : 1.

Adiaphorothrips is a synonym of *Machatothrips*, a genus of the Megathripinae (Mound, 1970*a* : 118), but Girault used the name for a wide range of Tubulifera with one or more pairs of cheek setae. The original description of *clavisetae* refers to four females and one male, although Girault subsequently used two of these specimens to describe *Adiaphorothrips citritarsus*, which is discussed above under the new genus *Akainothrips*. Of the remaining specimens on the type-slide, two are males of *Grypothrips mantis*, but the third specimen agrees with the description of *clavisetae* and is here designated as the LECTOTYPE female of that species.

♀ macropterous. Colour dark brown, fore tarsi and median longitudinal part of fore tibia golden yellow; antennals III–VII pale yellow with brown apex; major setae pale except terminal setae of tube; wings clear with dark cilia.

With the characters given above in the generic definition and key to species. Head shorter and pronotum less reticulate than similar-sized specimen of *mantis*. Pelta with rounded anterior margin (Text-fig. 21); posterior half of metanotum very coarsely reticulate.

Measurements in microns of holotype ♀. Body length 4000. Head, length 500; width behind eyes 270; postocular seta 165. Pronotal shield, length 385; median width 450; epimeral seta 130. Fore wing, length 1450; distal width 180; number of duplicated cilia 33. Tergite IX, B1 320; B2 350; B3 320. Tube, length 350; terminal setae 350. Antennal segments length, 50; 74; 152; 120; 105; 97; 80; 30.

MATERIAL STUDIED. LECTOTYPE ♀. QUEENSLAND: Dalby, in forest, 10.ii.1924 (*A. Girault*), in Queensland Museum.

Grypothrips curiosus Girault

(Text-figs 16 & 17)

Gryptothrips [sic] *curiosus* Girault, 1927 (38) : 1.

♀ macropterous. Colour of tube and terminal setae dark brown, rest of body and head golden brown, fore legs and lateral margins of pronotum golden yellow, antennals III–VII yellow with brown apices; wings clear, cilia dark; major setae pale. With the characters given above in the generic definition and the key to species.

Measurements (in microns) of one ♀ from Goondiwindi. Body length 3800. Head, length 510; width behind eyes 260. Pronotal shield, length 260; median width 370; epimeral setae 90; midlateral and posteroangular setae 50. Mesonotal midlateral seta 55. Fore wing, length 1500; distal width 130; number of duplicated cilia 28; sub-basal setae 50. Tergite IX, B1 225; B2 240; B3 260. Tube length 310; terminal setae 480. Antennal segments length, 55; 75; 130; 105; 97; 75; 70; 23.

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: Wallumbilla, on Brigalow [*Acacia harpophylla*], 17.x.1923 (*A. Girault*), in Queensland Museum.

QUEENSLAND: 5 miles north of Goondiwindi, 1 ♀ beaten from *Acacia ?harpophylla*, 16.vii.1968 (*L. A. Mound* 726), in BMNH.

Grypothrips mantis Karny

(Text-figs 18–20)

Grypothrips mantis Karny, 1924 : 28.

The individuals of this species vary greatly in size even within a single population. Males are rather smaller than females and also have a smaller size range, otherwise the two sexes are very similar. The largest and smallest females in a single series collected at Lake George, N. S. W. had body lengths of 4400μ and 3100μ, and head lengths of 550μ and 420μ. Moreover large body size is accompanied by hypertrophy of the fore femur, the fore tibial tubercles, the base of seta B_2 on tergite nine, and also the genae on either side of the mouth cone. Text-figs 18–19 and the measurements given below are taken from the largest and smallest females of this species that have been seen.

All the specimens from Canberra and Lake George have the seventh antennal segment dark, similar to the holotype from Lamington, Queensland. However, several specimens from near Parkes and Forbes, N. S. W. have the seventh antennal segment clear yellow in the basal half. This is not accepted here as indicating a difference between species, as in a population from near Walgett, N. S. W. all the individuals have the basal half of the seventh antennal segment light brown.

Measurements (in microns) of a large ♀ from Forbes, with a small female from Lake George in parentheses. Body length 4900 (2600). Head, length 550 (370); width across eyes 270 (200); postocular seta 120 (55). Pronotal shield, length 420 (185); median width 465 (300); epimeral seta 130 (60). Fore wing, length 1900 (1100); distal width 190 (100); number of duplicated cilia 34 (17); sub-basal setae 70 (30). Tergite IX, B_1 175 (115); B_2 165 (120); B_3 260 (175). Tube, length 320 (225); terminal setae 540 (330). Antennal segments length, 50 (32); 80 (58); 145 (80); 123 (77); 100 (68); 68 (60); 68 (57); 16 (16).

The glandular area on sternite VIII of the male occupies the whole of the sternite.

Measurements (in microns) of a large ♂ from Lake George. Body length 3300. Head, length 400; width across eyes 225; postocular seta 70. Pronotal shield, length 240; median width 350. Fore wing, length 1300; distal width 115; number of duplicated cilia 18. Tergite IX, B_1 152; B_2 130; B_3 190. Tube, length 240; terminal setae 350.

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: Glen Lamington, November (*Mjoberg*), in Riksmuseum, Stockholm. There is a ♀ with identical data labelled by Karny in Dr Priesner's collection, although the original description refers to a single specimen.

NEW SOUTH WALES: Lake George, 25 miles NE of Canberra, 12 ♀, 5 ♂ in Lepidoptera mine on *Acacia implexa* phyllode, 31.i.1968 (*L. A. Mound* 463); 15 miles NE of Walgett, 3 ♀, 4 ♂ in split stems of *Acacia stenophylla*, 5.vi.1968 (*L. A. Mound* 663); 10 miles south of Parkes, 1 ♀ in gall on *Acacia pendula*, 8.iii.1968 (*L. A. Mound* 540); 19 miles south of Forbes, 3 ♀ in shrivelled galls on *A. pendula*, 7.iii & 6.vi.1968 (*L. A. Mound* 532 & 676); 23 miles south of Gilgandra, 1 ♀ in small dead gall, 1 ♂ in split stem of *A. pendula*, 6.vi.1968 (*L. A. Mound* 673 & 680), in BMNH; Parkes, 5 ♀ between leaves in webbing of caterpillar, 7.viii.1959 (*E. M. Reed*), in ANIC. AUSTRALIAN CAPITAL TERRITORY: Black Mountain, Canberra; 4 ♀, 3 ♂ in leaf mine of *Labdia semnostola*—Cosmopterygidae (det. I. Common) on *Acacia implexa*, 29.i, 7.iv & 5.v.1968 (*L. A. Mound* 454, 624 & 648); 3 ♀ between phyllodes of *A. implexa* webbed by *Acropolites dryinodes*—Tortricidae (det. I. Common), 5.v.1968 (*L. A. Mound* 649 & 650), in BMNH; 5 ♀, 9 ♂ on *Acacia longifolia*, 21.i.1964 (*E. M. Reed*), in ANIC.

KATOTHRIPS gen. n.

Type-species: *Kladothrips tityrus* Girault.

Small to medium sized, pale or brown species of Phlaeothripinae. Head longer than broad, cheeks without major setae, weakly constricted behind eyes, parallel or weakly concave; postocular setae far behind eyes, or not developed; maxillary bridge present, although not always heavily sclerotized; mouth cone rather broadly rounded. Antennae on anterior margin of head or slightly ventral; antennal III with one sense cone which usually arises on ventral surface, IV with three (or two) sense cones; apex of VI broadly truncate, VII and VIII closely united. Pronotum wider than long, epimeral sutures complete; epimeral setae widely expanded, remaining major setae not developed except in *tityrus*; praepectal plates present or absent, mesopraesternum reduced to two lateral triangles; fore femora enlarged, fore tibia with an apical tubercle in three species; fore tarsus with a tooth in both sexes. Mesonotal midlateral setae small in *tityrus*, not developed in other species; metanotal setae small and acute. Fore wings, when present, parallel-sided, rather weak, without duplicated cilia except in *duplex*. Tergites II–VII with two pairs of wing-retaining setae, these are usually reduced on VII; B_1 and B_2 on tergite IX short and expanded; sides of tube frequently convex, narrowed to apex, terminal setae fine and usually short; terminal aperture of tube constricted, occupying about one third of terminal diameter. Sternite VIII of male *tityrus* with transverse glandular area anterior to accessory setae.

As is clear from the above definition, the species included in this new genus are rather diverse. The group probably represents the basal stock from which both *Dactylothrips* and *Oncothrips* have been derived. *K. tityrus* is the largest of the species included, and in some ways is the most specialized, whereas *duplex* can be regarded as the least specialized. All six species have the terminal aperture of the tube constricted as in *Dactylothrips*, and both *duplex* and *brunneicorpus* have indications of the longitudinal sutures which are typical of the tergites of *Dactylothrips*. The species included in both these genera have a broadly rounded mouth cone, rather heavily sclerotized posterior abdominal segments, the praepectal plates either present or absent, a tendency for reduction of the major pronotal setae, and a tendency for the tube to be aberrant and non-tubular in shape. In *Dactylothrips* species the maxillary stylets are close together in the middle of the head, the antennae arise on the anterior margin of the head, and the fore wings lack duplicated cilia. In the first two of these characters *Katothrips* is more similar to *Oncothrips*, although in the latter genus the maxillary bridge is even less well sclerotized. The ventral position of the sense cone on the third antennal segment is most unusual, although there is a tendency in both *Dactylothrips* and *Oncothrips* for the antennal sense cones to be ventrolateral. The generic name is derived from the Greek *kato*, meaning beneath or below, and refers to the position of the sense cones.

The species of *Katothrips* probably live in cryptic situations on *Acacia* trees such as in leaf-mines or tied leaves, or in galls. However, they are not primary gall producers. Careful examination of such habitats in Australia, including Hymenoptera and fungus galls, will undoubtedly produce more species.

Key to the Species of *Katothrips*

1 Fore tibia with a small tubercle at inner apex 2
– Fore tibia without an apical tubercle
Postocular and pronotal major setae not developed, except epimerals . . . 4
2 Postocular setae not developed (Text-fig. 30); pelta slender, 1·3 times as long as wide (Text-fig. 38); fore wing with duplicated cilia . . . . . . ***duplex*** (p. 413)
– Postocular setae well developed, far behind eye; pelta as wide, or wider than long; fore wing, when present, without duplicated cilia 3
3 Pronotal anteroangular, midlateral and posteroangular setae not different from pronotal discal setae (Text-fig. 25); terminal setae less than half as long as tube; pelta triangular (Text-fig. 39) . . . . ***brunneicorpus*** (p. 412)
– Pronotal major setae expanded, about half as long as epimeral setae (Text-fig. 23); terminal setae more than half as long as tube; pelta broadly rounded (Text-fig. 40) ***tityrus*** (p. 410)
4 Tube more than 1·5 times as long as maximum width, sides straight (Text-fig. 29); terminal setae longer than tube . . . . ***yamma*** (p. 416)
– Tube less than 1·3 times as long as maximum width, sides convexly narrowed to apex (Text-figs 27 & 28); terminal setae shorter than tube. 5
5 Antennal IV with two sense cones (Text-fig. 35) . . . . . . ***hyrum*** (p. 414)
– Antennal IV with three sense cones (Text-fig. 36) . . . . ***pendulae*** (p. 414)

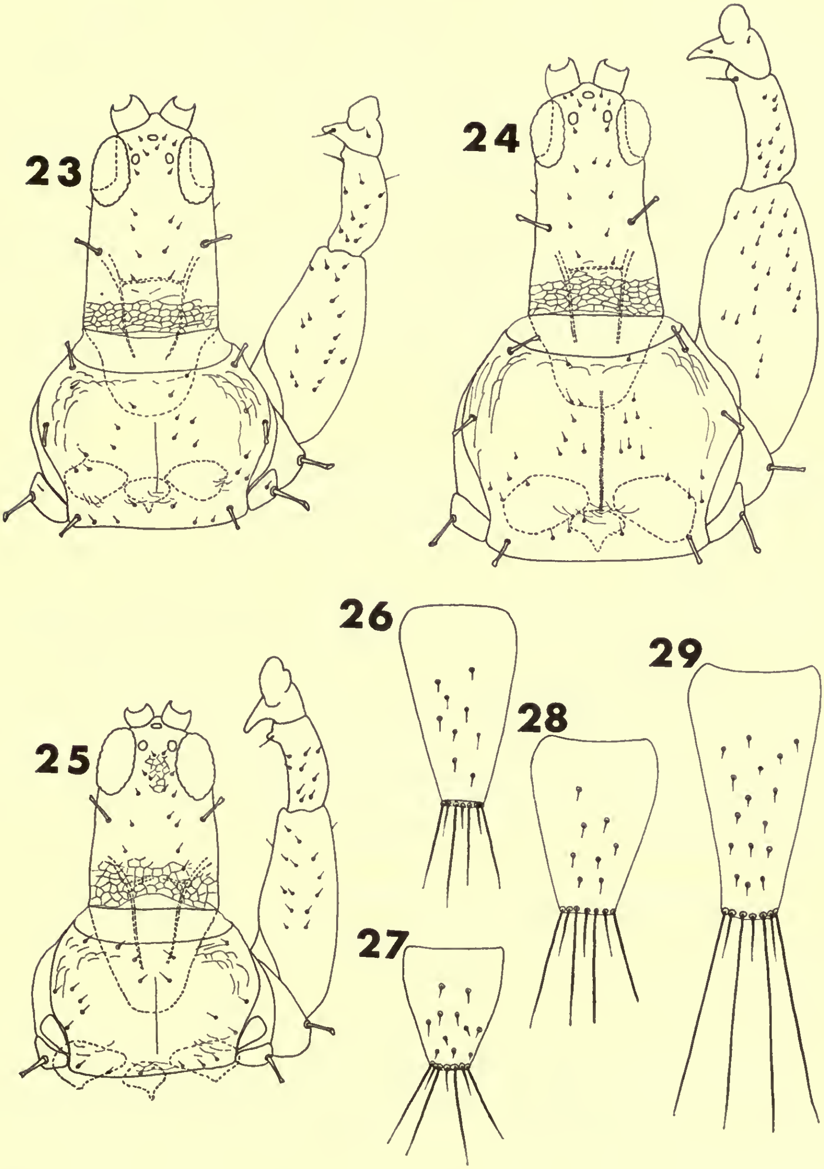
Katothrips tityrus (Girault) **comb. n.**

(Text-figs 23, 24, 33 & 40)

Kladothrips tityrus Girault, 1928 (43) : 1.
Kladothrips acallurus Bagnall, 1932 : 507–509. **Syn. n.**
Kladothrips differens Bagnall, 1932 : 509. **Syn. n.**

Girault compared this species briefly with *Kladothrips augonsaxxos*. There is a single specimen in both the British Museum (Natural History) and the Victorian Museum, Melbourne which bear identical data to the holotype of *tityrus*, although these were labelled by R. Kelly as *Kladothrips rodwayi*. The unique holotype of *differens* is a very large hemimacropterous male, and the lectotype of *acallurus* is a large macropterous (dealate not apterous cf. Bagnall) female. A long series of this species from Lake George, N. S. W. has shown that the head is longer in oedymerous than in gynaecoid individuals, and moreover the head of the male is more constricted medially (Text-figs 23 & 24). Females occur as either macropterae or hemimacropterae although only hemimacropterous males are known. However the oedymerism is not related to the two wing lengths. This type of variation should be contrasted with that of *Oncothrips tepperi* in which wing length is continuously variable and is closely related to the degree of oedymerism.

K. tityrus is very similar to *brunneicorpus* described below, but in that species the pronotal major setae are not differentiated from the discal setae except for the epimerals. The species does not produce galls but has been found in the galls of chalcid wasps, and in Lepidopterous leaf-mines and tied phyllodes on *Acacia* trees.



Figs 23–29. *Katothrips* species. 23–25. Head, pronotum and fore leg: 23, *tityrus* female. 24, *tityrus*, male. 25, *brunneicorpus*, female. 26–29. Tube: 26, *duplex*. 27, *hyrum*. 28, *pendulae*. 29, *yamma*.

The larvae are yellow with a dark head and legs, and a bright median longitudinal stripe of red hypodermal pigment.

♀ macropterous or hemimacropterous. Colour brown; yellow tarsi and apices of tibiae; antennal III and distal half of II yellow, IV yellow brown, V and base of VI light brown; posterior of pterothorax and lateral parts of abdominal tergites golden, tergites III–VII with dark median area behind antecostal ridge; fore wing and major setae colourless.

Measurements (in microns) of a large macropterous ♀ and a small hemimacropterous ♀ from Lake George. Body length 2800 (2350). Head, 370 (300); median width 170 (160); postocular seta 40 (40). Pronotal shield, length 270 (210); median width 370 (305); epimeral seta 58 (55); anteroangular seta 35 (30). Fore wing, length 1150 (450); distal width 115; sub-basal setae 50. Mesonotal lateral seta 16. Tergite IX, B1 87 (71); B2 87 (71); B3 160 (150). Tube, length 225 (195); terminal setae 210 (200). Antennal segments length, 50 (42); 65 (60); 70 (58); 65 (52); 65 (52); 65 (55); 65 (55); 16 (16).

♂ hemimacropterous. Colour and structure similar to female but head more slender; sternite VIII with transverse glandular area in front of accessory setae.

Measurements (in microns) of one large and one small male from Lake George. Body length 2250 (2100). Head, length 320 (290); median width 145 (145) postocular seta 50 (42). Pronotal shield, length 270 (240); median width 370 (350); epimeral seta 52 (45). Fore wing 390 (390). Tergite IX, B1 67 (67); B2 67 (67); B3 155 (145). Tube, length 160 (160); terminal setae 170 (175).

MATERIAL STUDIED. Holotype ♀. VICTORIA: Box Hill, near Melbourne, on leaves of *Acacia melanoxylon*, 5.iv.1928 (*R. Kelly*), in Queensland Museum. There is a female with identical data in both BMNH and the Victoria Museum, Melbourne.

Holotype ♂ of *differens*. VICTORIA: (R. Kelly N.S. ?133), in BMNH.

Lectotype ♀ of *acallurus* with 1 ♂, 2 ♀. VICTORIA: (R. Kelly NS 133), in BMNH.

NEW SOUTH WALES: Lake George, 25 miles east of Canberra, 25 ♀ (5 hemimacropterous), 6 ♂ in Lepidoptera mine on phyllode of *Acacia implexa*, 31.i.1968 (*L. A. Mound* 463), in BMNH; Manly, near Sydney, 7 ♀ in Chalcid gall on *Acacia longifolia*, ii.1925, in N.S.W. Dept. of Agriculture. AUSTRALIAN CAPITAL TERRITORY: Bendora at 4000 feet, 7 ♀ (3 hemimacropterous) in tied leaves on *Acacia melanoxylon*, 14.ii.1968 (*L. A. Mound* 497), in BMNH. QUEENSLAND: Brisbane, 22.v.1958 (*D. Campbell*), in University of Queensland.

Katothrips brunneicorpus (Girault) **comb. n.**

(Text-figs 25, 37 & 39)

Polyphemothrips brunneicorpus Girault, 1927 (35): 3.

♀ macropterous. Colour brown, abdominal segments I and II and lateral areas of III and IV golden, dark median area on tergites III–VII behind antecostal ridge; tarsi yellow, fore tibiae and mid and hind legs yellow-brown; antennal III yellow, IV and V, apex of II and base of VI light brown, I, VII and VIII brown; major setae and fore wings pale, cilia not dark.

Cheeks weakly constricted behind eyes but bulging near base; postocular setae well developed, maxillary stylets low in head (Text-fig. 25). Antennal IV with three sense cones, but the two ventral ones are widely separated (Text-fig. 37). Praepectus present but close under mouth cone. Metanotum broadly reticulate. Pelta triangular (Text-fig. 39). Tergites III–VII with a pair of longitudinal weakly sclerotized areas just mesad of wing-retaining setae; tergite VII with two pairs of well developed wing-retaining setae; margins of tube not straight, terminal aperture constricted.

Measurements (in microns) of ♀ from Laurieton with holotype in parentheses. Body length 1800 (1900). Head, length 225 (275); width behind eyes 135 (145); postocular setae 38 (55). Pronotal shield, length 145; median width 250; epimeral seta 47. Fore wing, length 700; distal width 70; sub-basal seta 30. Tergite IX, B1 64; B2 55; B3 90. Tube, length 125; terminal setae 52. Antennal segments length, 32; 50; 48; 52; 48; 48; 55; 20.

MATERIAL STUDIED. Holotype ♀ (not ♂ cf. Girault). QUEENSLAND: Nelson [Gordonvale], forest, in Queensland Museum.

QUEENSLAND: Mt. Gravatt [Brisbane], 11 May 1923, 1 ♀ in forest; North Queensland without further data, 1 ♀ (labelled as ♂ paratype), in Queensland Museum. NEW SOUTH WALES: Laurieton, on *Acacia* sp., 26.x.1960 (*E. M. Reed*), in ANIC.

This species is intermediate between *tityrus* and the other species of this genus in the development of the postocular setae and the complete absence of pronotal major setae except the epimerals. However *brunneicorpus* has a pair of praepectal plates almost concealed beneath the mouth cone, although the anterior part of the prothoracic sternum of *tityrus* is quite membranous. The variation in head shape of the two species is very similar and the Text-figures are of the short-headed female from Laurieton.

Katothrips duplex **sp. n.**

(Text-figs 26, 30, 34 & 38)

♀ macropterous. Colour brown, tube dark; tarsi and apices of tibiae yellow; anterior abdominal segments golden brown with dark brown median area behind antecostal ridge; antennals III–V, base of VI and apex of II light brown to yellowish; fore wings and major setae pale, cilia not very dark.

Antennal IV with ventral sense cones not close together (Text-fig. 34). Head with cheeks parallel, stylets retracted almost to eyes; maxillary bridge pale but stout. Postocular and pronotal major setae (except epimerals) not distinguished from microsetae. Paired elongate sclerites on prothoracic sternum close to mouth cone apparently represent praepectus (Text-fig. 30). Metanotum elongate reticulate; pelta elongate (Text-fig. 38). Tergal posteroangular setae on II–VI shorter than B1 marginal seta; tergites III–VII with a pair of longitudunal weakly sclerotized areas just mesad of wing retaining setae; sides of tubes not straight, terminal aperture constricted (Text-fig. 26).

Measurements (in microns) of holotype. Body length 2100. Head, length 260; median width 155. Pronotal shield, length 160; median width 255; epimeral seta 30. Fore wing, length 800; distal width 70; sub-basal setae 28; number of duplicated cilia 7–9. Tergite IX, B1 & B2 26; B3 130. Tube length 130; terminal setae 80. Antennal segments length, 32; 50; 45; 45; 44; 42; 50; 16.

MATERIAL STUDIED. Holotype ♀. SOUTH AUSTRALIA: Willunga, 28 miles south of Adelaide, in *Acacia retinodes* flowers, 14.i.1968 (*L. A. Mound* 453), in ANIC.

Two paratype females, collected with the holotype, in BMNH.

The other five species included in this genus do not have duplicated cilia on the fore wing, but three of these species do have a weakly developed praepectus. *K. duplex* is intermediate between *Oncothrips* (fore wing duplicated cilia present, praepectus absent, antennal IV with two sense cones, fore tibia unarmed) and *Dactylothrips* (fore wing duplicated cilia absent, antennal IV with two sense cones, praepectus and fore tibial tubercle present or absent). *Katothrips* species appear to belong to a generalized group, none of which produce galls, but from which the more highly specialized gall producers have been derived.

Katothrips hyrum sp. n.

(Text-figs 27, 31 & 35)

♀ macropterous. Colour brown, apex of abdomen dark; tarsi and apices of fore tibiae yellow; antennal III and apex of II yellow-brown, IV–VIII as dark as head; major setae and fore wings pale, cilia pale. Cheeks weakly convex, postocular setae not larger than other head setae; maxillary stylets retracted to postocular setae. Antennae short, IV about as long as wide with two sense cones (Text-fig. 35). Praepectus and spinasternum absent, mesopraesternum very reduced. Fore tibia short with no apical tubercle (Text-fig. 31). Metanotum longitudinally reticulate; pelta slender; wing-retaining setae reduced on tergite VII; tube almost beehive-shaped with convex sides, terminal setae short (Text-fig. 27).

Measurements (in microns) of holotype. Body length 1600. Head, length 210; median width 130. Pronotal shield, length 135; median width 193; epimeral setae 26. Fore wing, length 580; distal width 60; sub-basal seta 13. Tergite IX, B1 20; B2 42; B3 80. Tube, length 75; maximum width 65; terminal setae 65. Antennal segments length, 26; 45; 32; 29; 29; 29; 39; 10.

♀ hemimacropterous. Very similar to holotype but with reduced pterothorax and pelta; forewing without cilia, length 210μ.

MATERIAL STUDIED. Holotype ♀. NEW SOUTH WALES: 23 miles south of Gilgandra, in small phyllode gall on *Acacia pendula* (? or *oswaldi*), 6.vi.1968 (*L. A. Mound* 672), in ANIC.

Paratype hemimacropterous female collected in same gall as holotype, in BMNH.

The gall in which this species was collected was less than 5 mm deep. It is possible that this was an abandoned, poorly developed gall of *Oncothrips tepperi*, and that the host plant was *Acacia oswaldi*. In the field the author identified the tree as a poorly grown specimen of *pendula*, which was the dominant species in the vicinity. The small, almost beehive-shaped tube of *hyrum* with the terminal aperture constricted is very similar to that of *Dactylothrips marsupium*.

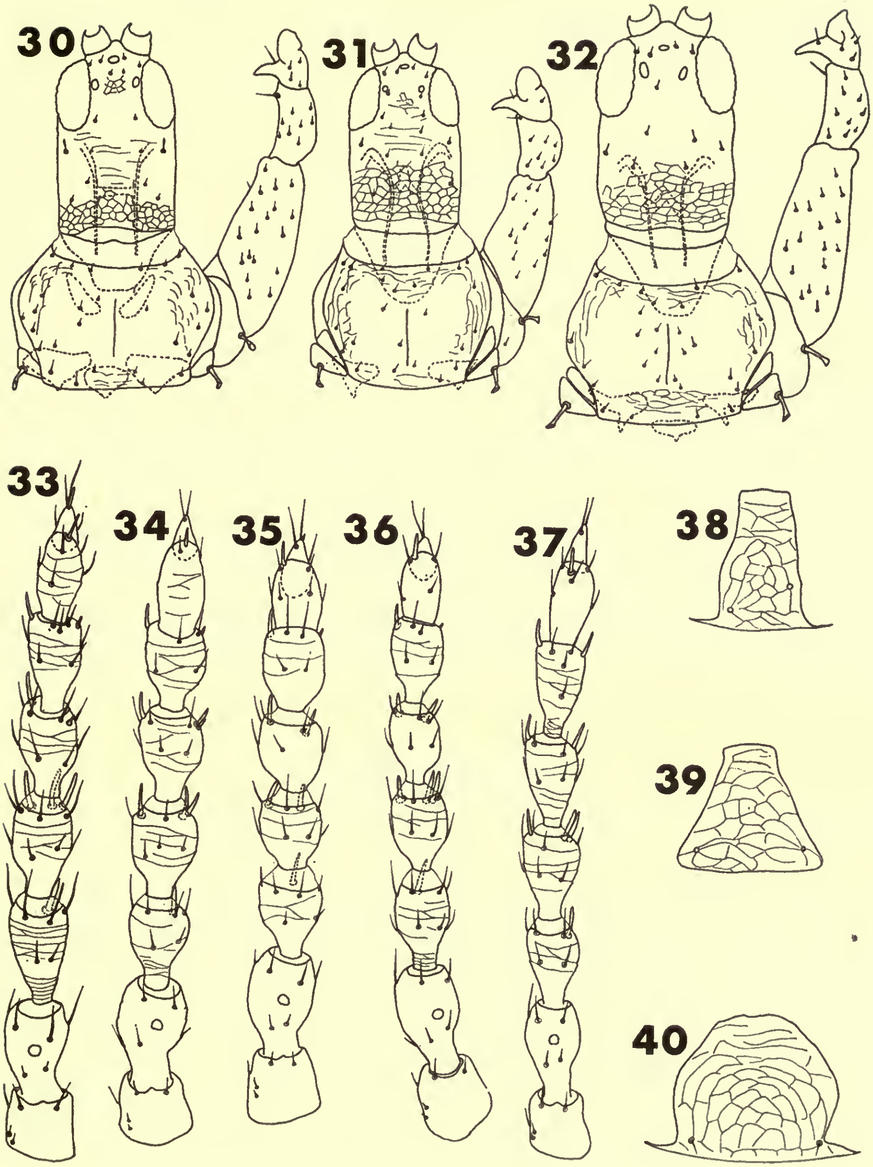
Katothrips pendulae sp. n.

(Text-figs 28, 32 & 36)

♀ macropterous. Colour pale yellowish brown, shaded along external margins of legs, tergites III–VII with a median dark area behind antecostal ridge; segments VIII and IX brown, tube dark brown; antennals I and III yellow, II and IV with brown markings, V and VI pale basally, VII and VIII dark; major setae and fore wings pale.

Cheeks weakly convex, stylets not deeply retracted into head (Text-fig. 32). Antennal IV with three ventral sense cones (Text-fig. 36). Praepectus and spinasternum present. Metanotum with no sculpture laterally; pelta slender; wing-retaining setae on tergite VII reduced; tube margins convex (Text-fig. 28).

Measurements (in microns) of holotype. Body length 2000. Head, length 255; median width 160. Pronotal shield, length 160; median width 270; epimeral seta 35. Fore wing, length 800; sub-basal setae 23. Tergite IX, B1 45; B2 58; B3 100. Tube, length 97; maximum width 80; terminal setae 80. Antennal segments length, 26; 50; 54; 45; 45; 43; 50; 16.



FIGS 30–40. *Katothrips* species. 30–32. Head, pronotum and fore leg: 30, *duplex*. 31, *hyrum*. 32, *pendulae*. 33–37. Antenna: 33, *tityrus*. 34, *duplex*. 35, *hyrum*. 36, *pendulae*. 37, *brunneicorpus*. 38–40. Pelta: 38, *duplex*. 39, *brunneicorpus*. 40, *tityrus*.

Material studied. Holotype ♀. New South Wales: Hillston, between leaves of *Acacia pendula*, 22.ix.1959 (*E. M. Reed*), in ANIC with wings on separate microslide.

Paratype ♀. New South Wales: 19 miles south of Forbes, in gall on *Acacia pendula*, 6.vi.1968 (*L. A. Mound* 677), in BMNH.

The head of this species is very similar to that of *yamma* described below, but the tube is closely similar to *hyrum* described above.

Katothrips yamma sp. n.

(Text-fig. 29)

♀ macropterous. Colour yellowish with faint brown shadings, antennals VII and VIII darker, distal three-quarters of tube dark brown. Structure of head, antennae, fore legs, pronotum, praepectus and pelta, and sculpture of metanotum very similar to *pendulae* described above. However, tube is long with almost straight sides and terminal setae longer than tube (Text-fig. 29); sternites VI and VII with a transverse band of linear markings between accessory setae and antecostal ridge.

Measurements (in microns) of holotype. Body length 2200. Head, length 260; median width 165. Pronotal shield, length 195; median width 260; epimeral seta 35. Fore wing broken, sub-basal seta 19. Tergite IX, B_1 23; B_2 26; B_3 80. Tube, length 140; maximum width 77; terminal setae 160. Antennal segments length, 32; 50; 45; 43; 48; 48; 55; 13.

Material studied. Holotype ♀. Queensland: 20 miles north of Durham Downs, SE of Lake Yamma Yamma, in galls of *Kladothrips ellobos* on *Acacia cambagei*, 13.ii.1968 (*R. Lewis*), in ANIC.

The fore wings of the unique holotype are missing beyond the basal third. This species is very similar to *pendulae* but is readily distinguished by the normal form of the tube.

KELLYIA Bagnall

Kellyia Bagnall, 1929*b* : 188–189. Type-species: *Teuchothrips hoodianus*, by monotypy.
Kellyia Bagnall; Mound, 1968 : 128.

Large black macropterous species of Phlaeothripinae. Head moderately long, at least 1·5 times as long as wide; eyes large, longer on dorsal surface than on ventral; ocelli not directed forwards, antennae on anterior border of head; postocular setae well developed; mouth cone rounded; maxillary stylets retracted to eyes, meeting in middle of head. Antennae eight-segmented, III more than 4 times as long as wide with one sense cone; IV with three sense cones; VII and VIII closely joined. Pronotum transverse, about 0·5 as long as head in female and small males, but in oedymerous males almost 0·7 as long as head; four pairs of major setae developed, anteromarginals usually absent; epimeral sutures complete; fore femur stout, fore rarsus with a tooth in both sexes. Praepectus absent; mesopraesternum sexually dimorphic, anterior border of mesosternum much narrower in oedymerous males than in minor males and females. Lateral mesonotal setae expanded; metanotum reticulate with median setae slender and far apart. Fore wings slightly wider distally, cilia closely set, more than 20 duplicated cilia; sub-basal setae B_1 and B_2 short and expanded, B_3 short and acute. Pelta reticulate, triangular but usually with apex transverse; tergites II–VI with two pairs of wing-retaining setae, on VII these setae reduced; tergite IX with moderately long setae; tube shorter than head, margins straight; terminal setae pale. Sternites with median transverse row of accessory setae, marginal setae not half as long as sternite: males with glandular area on sternite VIII.

This genus is an offshoot of the *Teuchothrips* complex of species which cause leaf-roll galls on a wide range of plants in Australia, e.g. *Bursaria, Callistemon, Myoporum, Pittosporum, Stenocarpus*. *Kellyia* can be distinguished from *Teuchothrips* by the rather elongate head with the maxillary stylets meeting medially, and the long third antennal segment. The genus was placed in the Kladothripina by Priesner (1960 : 293) but is better placed in the Hoplothripina with *Teuchothrips* and such leaf-rolling genera as *Eugynothrips* and *Tolmetothrips*. *Kladothrips* is undoubtedly derived from this group, with *Oncothrips* and *Neocecidothrips* standing in an intermediate position. The two species placed in this genus have both been collected from galls, although they are not gall-forming insects. They have been found breeding in the galls of hymenoptera, but it is not possible to know if they feed on plant tissue or on fungus or are predatory on some other inquiline such as a mite species.

KEY TO THE SPECIES OF *KELLYIA*

1 Glandular area on sternite VIII of male forms a transverse median band (Text-fig. 45); tergite IX seta B_2 of male about half as long as B_1; pronotal anteromarginal setae developed in female; tarsal tooth of female small; tube relatively long, more than 1·5 times as long as B_1 on tergite IX; apex of antennal V normal (Text-fig. 63) **hoodianus** (p. 417)

– Glandular area on sternite VIII of male occupies most of sternite but is divided into two by median longitudinal band (Text-fig. 46); tergite IX seta B_2 of male about as long as B_1; pronotal anteromarginal seta not developed in male or female; tarsal tooth of female two-thirds as long as tarsal width; tube relatively short, less than 1·5 times as long as B_1 on tergite IX; apex of antennal V drawn out ventrally (Text-fig. 64) . . . . **biadenes** (p. 418)

Kellyia hoodianus (Bagnall)

(Text-figs 45 & 63)

Teuchothrips hoodianus Bagnall, 1924 : 630–631.
Mesothrips atrellus Girault, 1927 (36) : 2. **Syn. n.**
Kellyia hoodianus (Bagnall) Bagnall, 1929*b* : 188–189.
Kellyia hoodianus (Bagnall); Mound, 1968 : 129.

♂ macropterous. Colour dark brown, posterior of abdomen black, with red hypodermal pigment; fore tarsi and antennal II light brown; clear yellow in basal two-thirds of antennal III and bases of IV and V; wings clear, cilia dark; major setae shaded on head, pronotum and tergite IX B_2, rest clear. With the morphological characters given in the generic definition and key above; glandular area on sternite VIII extends fully across sternite, curves to anterior near lateral margins.

Measurements (in microns) of lectotype, with a minor male from Bell, N. S. W. and a major male from Melbourne, Victoria in parentheses. Body length 3300 (3000–3800). Head, length 420 (380–450); width 260 (230–260); postocular seta 90 (70–100). Pronotum, length 200 (150–280); median width 380 (340–440); mesosternal anterior border 130 (150–130). Fore wing, length 1200 (950–1300); maximum width 130 (90–150); sub-basal B_1 35 (32–45); number of duplicated cilia 22 (13–25). Tergite IX, B_1 195 (170–195); B_2 110 (95–110); B_3 160 (145–160). Tube, length 290 (265–300); terminal setae 260 (235–270). Antennal segments length, 40; 65; 160; 110; 80; 65; 65; 30.

♀ macropterous. Colour and structure similar to male except for the wide mesopraesternum and mesosternum anterior border, also the pronotal anteromarginal setae are as long as the anteroangulars.

Measurements (in microns) of large female from Melbourne. Body length 4300. Head, length 470; width 270; postocular seta 65. Pronotum, length 200; median width 410; meso. sternum anterior border 230. Fore wing 1300; width 140; number of duplicated cilia 20- Tergite IX, B_1 190; B_2 160; B_3 175. Tube length 330; terminal setae 300. Antennal segments length, 50; 70; 190; 115; 95; 65; 80; 30.

MATERIAL STUDIED. Lectotype ♂ (with paralectotype ♂). VICTORIA: Lake Tyers, *Acacia elata*, 21.ii.1919 (*R. Kelly*), in BMNH.

VICTORIA: Melbourne, Blackburn Lake Reservoir, 5 ♀, 1 ♂, 2 instar II in Hymenoptera galls on *Acacia baileyana*, 17.xi.1967 (*L. A. Mound* 371), in BMNH. NEW SOUTH WALES: Mittagong, 1 ♀, 1 ♂ sweeping, 1905 (*Kaebele*); Sydney, 1 ♂, 11.ii.1905; Pennant Hills near Sydney, 1 ♀ on *Themeda australis*, 26.i.1959 (*E. M. Reed*); Bell, 1 ♂ on *Acacia botrycephala*, 17.ix.1959 (*M. Casimir*), in ANIC.

The specimens collected by the author at Blackburn Lake, Melbourne were very active in life. When disturbed, they attempted to crawl into the crevices and emergence holes of the galls. The larvae have bright red transverse bands of hypodermal pigment, and the head, pronotum, antennae and last two abdominal segments are black. Girault's species *atrellus* was published with the data 'Enoggera, forest 10.xii.1921'. The holotype is not in Girault's collection at Brisbane, and the above synonymy is based on a female labelled by Girault from 'Wynnum, forest, Nov.'

Kellyia biadenes **sp. n.**

(Text-figs 10, 46 & 64)

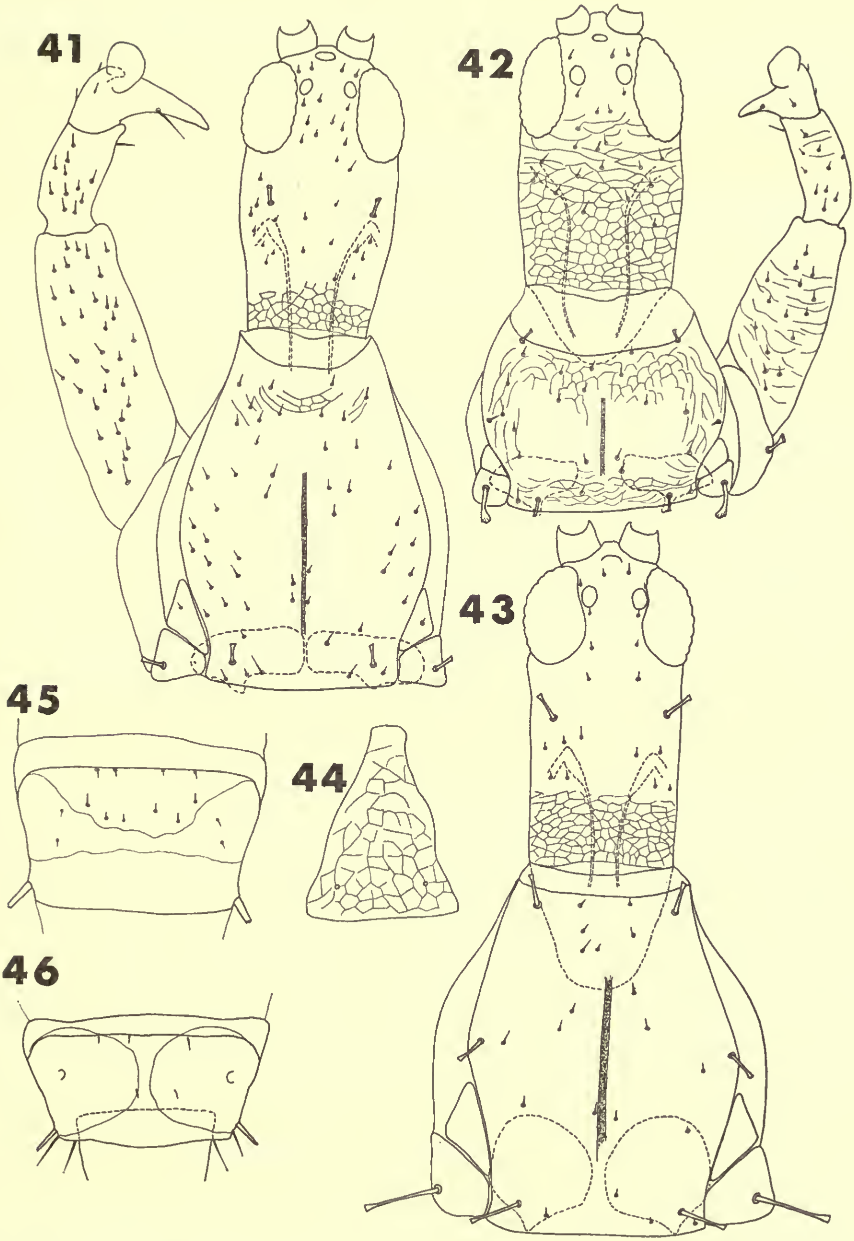
♂ macropterous. Dark brown to black, fore tibiae light brown, fore tarsi yellowish, antennals I, VII and VIII light brown, III–VI yellow-brown with light brown apices; fore wings pale, weakly shaded along hind margins, cilia dark; major setae weakly shaded, postocular darkest. With the morphological characters given in the generic definition and key to species above.

Measurements (in microns) of holotype with small and large male in parentheses. Body length 3000 (2600–3500). Head, length 380 (340–390); width 230 (230–250); postocular seta 90 (70–110). Pronotal shield, length 200 (165–250); median width 340 (300–450); mesosternum anterior border 130 (150–120). Fore wing, length 1140 (1020–1260); maximum width 130 (100–140); number of duplicated cilia 20 (19–21). Tergite IX, B_1 175 (175–225); B_2 160 (165–195); B_3 170 (175–220). Tube, length 225 (260–275); terminal setae 290 (?–320). Antennal segments length, 45; 65; 130; 110; 80; ?65; ?65; ?28.

♀ macropterous. Colour and structure very similar to male except for wide mesopraesternum.

Measurements (in microns) of allotype. Body length 3800. Head, length 440; width 280; postocular seta 70. Pronotal shield, length 220; median width 380; mesosternum anterior border 240. Fore wing, length 1300; maximum width 130; number of duplicated cilia 24. Tergite IX, B_1 210; B_2 210; B_3 200. Tube, length 275; terminal setae 310. Antennal segments length, 50; 80; 160; 130; 97; 70; 65; 26.

MATERIAL STUDIED. Holotype ♂. QUEENSLAND: Sandgate, in multilocular galls of a Pteromalid (Hymenoptera) on an undetermined plant, 4.x.1965 (*T. Weir*) in Brisbane Museum.



FIGS 41–46. 41. *Kladothrips ellobus*. 42. *Oncothrips habrus*. 43. *Kladothrips augonsaxxos*, head and pronotum. 44. *Kladothrips rugosus* pelta. 45 & 46. Glandular area on sternite VIII of *Kellyia* males. [illegible] *hoodianus*. 46, *biadenes*.

Allotype ♀, with 3 ♀, 4 ♂ paratypes collected with holotype. Paratypes have been deposited in ANIC, BMNH and the University of Queensland.

This material was loaned by the University of Queensland Department of Entomology. The dried galls contained very large numbers of eggs of the thrips as well as cast larval skins.

KLADOTHRIPS Froggatt

Kladothrips Froggatt, 1906 : 1011. Type-species: *K. rugosus*, by monotypy.
Kladothrips Froggatt; Bagnall, 1929*b* : 194.

Macropterous, bicoloured species of Phlaeothripinae causing galls on *Acacia* phyllodes. Head elongate, eyes large, cheeks usually narrowed to base; postocular setae small or absent; mouth cone short and rounded. Antennae eight-segmented, VII constricted at base, closely united with VIII; III with one sense cone, IV with three (or two) sense cones. Pronotal shield narrow, much longer than wide, epimeral sutures complete; major setae short and expanded, or absent (epimerals elongate in *augonsaxxos*); anteromarginal setae absent. Praepectus absent, sternal area of pronotum with large chitinous islets (7–10μ in diameter); mesopraesternum reduced or absent medially. Fore coxae and femora swollen; fore tibiae short and stout with a small apical tubercle on inner margin; fore tarsal tooth large, length of tooth including tarsal width greater than length of tibia. Mesonotal lateral seta expanded, metanotal median setae small. Fore wing pale with two expanded sub-basal setae and 15–20 duplicated cilia. Pelta elongate triangular, reticulate; tergites with reticulate sculpture particularly laterally, II–VII with two pairs of sigmoid wing-retaining setae, these setae sometimes reduced on VII. Tergite IX with B1 and B2 expanded, B3 long and acute; tube shorter than head, sides evenly narrowed to apex, terminal setae dark. Sternites with about 20 accessory setae in two irregular transverse rows (one row in *augonsaxxos*); glandular area on sternite VIII of male present or absent. Intersegmental membranes of abdomen frequently grossly swollen in egg-laying females (Text-fig. 47).

The genus *Kladothrips* has never been formally defined but was published by Froggatt in a footnote to an article on Australian thrips. The brief notes in the footnote indicated that the antennae were seven-segmented, but after studying specimens collected by Froggatt, both Moulton (1927) and Bagnall (1929*b*) corrected this statement. Bagnall gave *Oncothrips* Karny as a synonym of *Kladothrips* although these genera are here kept separate. *Kladothrips froggatti* Bagn. is here regarded as a synonym of *rodwayi* Hardy, and *K. intermedius* Bagn. as a synonym of *tepperi* Karny, and these two species are placed in *Oncothrips*. The species *acallurus* and *differens* described by Bagnall in *Kladothrips* in 1932 are here regarded as synonyms of *tityrus* Girault and placed in the new genus *Katothrips*. The type specimens of *Cladothrips* [sic] *punctatus* Rayment, 1948 have been studied on loan from the Australian National Insect Collection, Canberra. This species is a member of the Megathripinae and is here regarded as a synonym of *Phaulothrips fuscus* Moulton, 1935, **syn. n.**

As a result of the above changes only four species are now accepted in *Kladothrips*, one of which is here described as new and one is removed from *Grypothrips*. Three of these species, and probably all four, are primary gall producers on the phyllodes of four different species of *Acacia* trees. The genus includes the most highly specialized Phlaeothripinae associated with such galls, but is very closely related to *Onychothrips*. In particular *K. augonsaxxos* is intermediate between the two genera in such characters as the number of sense cones on the fourth antennal segment, the number of pronotal major setae, the shape of the head and probasisternal plates, and even the colour of the antennae. *Onychothrips* is distinguished by not having the pronotal shield unusually elongate, or in more general terms, in having a less elongate body but a more elongate tube. *Oncothrips*, although related, has no tubercle on the fore tibia and the males have a well developed glandular area on sternite eight.

In the British Museum (Natural History) collection there are five micropterous specimens collected by the author on *Acacia harpophylla*. These apparently represent a further species of *Kladothrips*, but as their most remarkable characters are undoubtedly correlated with microptery, the species cannot be defined adequately until macropterae become available.

KEY TO THE SPECIES OF *KLADOTHRIPS*

1 Probasisternal plates irregularly circular or pentagonal, almost as long as wide (Text-fig. 43); four pairs of major pronotal setae present; antennal IV with 2 sense cones; cheeks almost parallel; postocular setae present; antennal segments IV–VIII brown.
Maxillary stylets wide apart, not deeply retracted into head; on *Acacia doratoxylon* . . . . **augonsaxxos** (p. 422)

– Probasisternal plates transverse, half as long as wide, median margins closely parallel (Text-fig. 41); pronotal anteroangular and midlateral setae absent; antennal IV with 3 sense cones; cheeks convex, narrowed to base; postocular setae present or absent; antennals IV and V yellow 2

2 Maxillary stylets in retracted position close together in middle of head, reaching midpoint of dorsal head length; postocular and pronotal posteromarginal setae absent (Text-fig. 48); antennal III less than 1·5 times as long as wide; on *Acacia pendula* . . . . **rugosus** (p. 424)

– Maxillary stylets in retracted position wide apart near base of head, not retracted into head more than 1/3 of dorsal head length; postocular and pronotal posteroangular setae usually present; antennal III more than 1·8 times as long as wide . 3

3 Seta B1 on tergite IX more than 0·3 times as long as tube; antennae elongate, IV without a sharply constricted basal neck, III 2·1 times as long as wide, IV 1·7 times as long as wide (Text-fig. 54); anterior abdominal segments black, antennals VII and VIII brown; male with glandular area on sternite VIII; on *Acacia harpophylla* **acaciae** (p. 421)

– Seta B1 on tergite IX 0·25 as long as tube; antennal IV with sharply constricted basal neck; III 2·0 times as long as wide, IV 1·5 times as long as wide (Text-fig. 56); anterior abdominal segments yellow, antennals III–VII yellow, VIII yellowish brown; male without sternal gland; on *Acacia cambagei* . . . **ellobus** (p. 424)

Kladothrips acaciae (Moulton) **comb. n.**

(Text-fig. 54)

Grypothrips acaciae Moulton, 1968 : 109–110.

The genus *Grypothrips*, which Moulton apparently only knew through Karny's description, can be distinguished by means of the generic key given above. The present species is a typical *Kladothrips*, closely related to the type-species of the genus, *rugosus*, and the new species described below. The male differs from both these species however in having an irregularly circular glandular area on sternite VIII which is about 35 microns in diameter.

Two specimens of *acaciae* were found in the Froggatt collection at Canberra bearing almost identical data to the holotype, and the author collected a single female with numerous larvae in a large bean-shaped phyllode gall on *Acacia harpophylla*. Similar galls on *harpophylla* have been collected at various times containing *Koptothrips zelos*, but the other species of *Koptothrips* are all known to be inquilines, not gall-producing species. In view of this it is probable that *acaciae* is the true gall-former on *harpophylla*, and *K. zelos* an inquiline. The galls in which these thrips have been taken are the largest thrips-induced galls from *Acacia* species. Up to two inches in length they are shaped like tubular bean- or pea-pods and the evaginated portion of the phyllode is usually reddish in colour.

Measurements (in microns) of male. Body length 3300. Head, length 400; width across eyes 200. Pronotal shield, length 500; median width 300; epimeral seta 50. Tergite IX, B_1 90; B_2 100; B_3 165. Tube, length 260; terminal setae 200. Antennal segments length, 50; 55; 95; 77; 70; 65; 62; 16.

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: Millmerran, on *Acacia harpophylla*, 3.ix.1928 (*J. MacQueen*), in California Academy of Sciences (Moulton No. 3068).

QUEENSLAND: Millmerran, 1 ♀, 1 ♂ in bean-leaf gall on Brigalow, *Acacia harpophylla*, 10.ix.1928 (*J. MacQueen*), in ANIC; Moonie, 1 ♀ with about 100 second instar larvae in bean-shaped phyllode gall on *Acacia harpophylla*, 16.vii.1968 (*L. A. Mound* 733), in BMNH.

Kladothrips augonsaxxos Moulton

(Text-figs 43 & 55)

Kladothrips augonsaxxos Moulton, 1927 : 153–155.

The host-plant of this species, *A. doratoxylon*, is reported to be most common in the Western Plains of New South Wales, although it has been recorded from as far west as Mount Olga in Central Australia. *A. doratoxylon* is classified in the Section of *Acacia* known as the Juliflorae which have the flower heads elongate, not globular as in typical *Mimosa* blossoms. It is interesting that the host-plant of *Onychothrips*, *A. aneura*, is also placed in the Juliflorae although the host-plants of the other three *Kladothrips* species are placed in the Section Plurinerves. As noted above *K. augonsaxxos* is closely related to the species of *Onychothrips*.

♀ colour brown; antennal III, metathorax and pelta, fore tibia and tarsus and extreme apex of fore femur yellowish. With the morphological characters given in the generic definition and key to species above.

Measurements (in microns) of one female from type host and locality. Body length (abdominal intersegmental membranes hypertrophied) 4400. Head length 350; median width 160; postocular seta 32. Pronotal shield, length 360; median width 280; epimeral seta 95. Tergite IX, B_1 70; B_2 80; B_3 120. Tube, length 240; terminal setae 150. Antennal segments length, 50; 65; 77; 70; 70; 58; 65; 16.

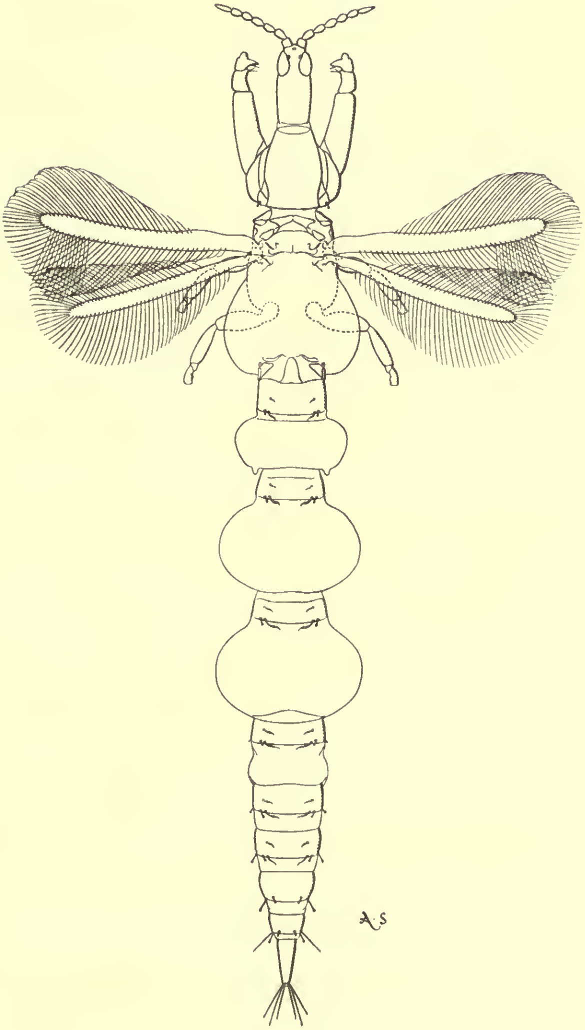


FIG. 47. *Kladothrips rugosus*, female in egg laying condition.

Material studied. Holotype ♀. New South Wales: Gilgandra, in spherical gall on *Acacia doratoxylon*, 13.x.1925 (*W. W. Froggatt*), in California Academy of Sciences (Moulton No. 1347).

Paratype ♀ bearing same data as holotype in BMNH.

New South Wales: Gilgandra, 8 ♀ in galls on *A. doratoxylon*, 1926 (*G. Withers*); Griffith, 2 ♀ in *Acacia* galls, 8.xii.1959 (*E. L. Jones*), in ANIC.

Kladothrips ellobus sp. n.

(Text-figs 41 & 56)

♀ bicoloured yellow and brown; brown on head and antennal I, pronotum, fore femora, abdominal segments VII–X and median areas of III–VI; yellow antennae, pterothorax and legs, and anterior abdominal segments, fore tibiae and tarsi largely yellow but with shaded margins (the brown areas probably increase in density and extent with age even after an individual has reached sexual maturity). With the morphological characters given in the generic definition and key to species above.

Measurements (in microns) of holotype. Body length 2800. Head, length 300; width across eyes 170; postocular seta 23. Pronotal shield, length 330; median width 260; epimeral seta 32. Fore wing, length 950; number of duplicated cilia ?15. Tergite IX, B1 38; B2 55; B3 100. Tube, length 195; terminal setae 160. Antennal segments length, ?30; 55; 65; 55; 50; 50; 55; 16.

♂ colour and structure similar to ♀; sternite VIII without a glandular area; left postocular seta not developed in allotype.

Measurements (in microns) of allotype: Body length 2900. Head, length 220; width across eyes 170. Pronotal shield, length 370; median width 270; epimeral seta 35. Tergite IX, B1 45; B2 52; B3 100. Tube, length 190; terminal setae 145.

Material studied. Holotype ♀. South Australia: East of Dalhousie Springs (approximately 80 miles north of Oodnadatta), in gall on *Acacia cambagei* by a creek, 12.ii.1965 (*L. A. Mound* 301, taken from an herbarium specimen at Waite Institute, Adelaide, collected by *D. E. Symmons* 3263), in ANIC.

Paratype ♀ taken in similar gall to holotype on the same herbarium specimen, in BMNH.

Allotype ♂ and 3 ♀. Queensland: 20 miles north of Durham Downs (30 miles south east of Lake Yamma Yamma), in galls on *Acacia cambagei*, 13.ii.1968 (*R. Lewis*), in BMNH.

The phyllode galls from which these specimens were taken looked like flat kidney-shaped pods, and the specific epithet *ellobus* is derived from the fact that the specimens were found 'in a pod'. These 'pods' were about 2 cm in diameter and 3 mm thick, and could be mistaken quite readily for the true pods of the *Acacia* tree.

Kladothrips rugosus Froggatt

(Text-figs 44, 47–49 & 57)

Kladothrips rugosus Froggatt, 1906 : 1011.
Kladothrips rugosus Froggatt; Bagnall, 1929*b* : 194–195.

The maxillary stylets of *rugosus* are deeply retracted into the head as in the two species of *Onychothrips* but unlike the other species of *Kladothrips*. However, in

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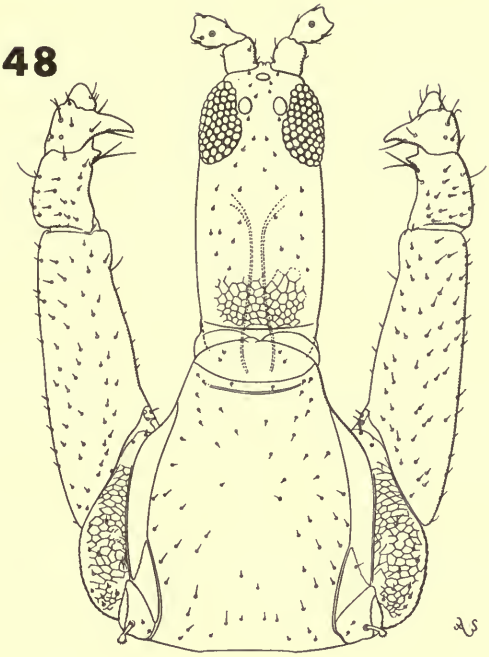

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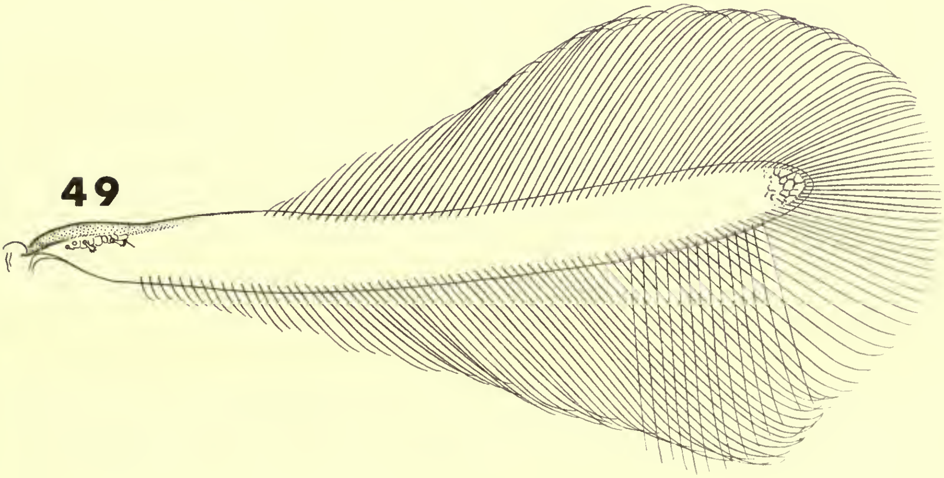


Figs 48–49. *Kladothrips rugosus*: 48, head, pronotum and fore leg of female. 49, fore wing.

the extreme reduction of the major setae and the very pale antennae *rugosus* appears to be the most highly evolved of the *Kladothrips* group. The abdominal intersegmental membranes of many females of this species are greatly hypertrophied as Froggatt (1927 : 87) has figured for *augonsaxxos* (Text-fig. 47).

The galls formed by *rugosus* on *A. pendula* are flask-shaped when fully developed, distinctly wider at the base than at the point of evagination from the phyllode, about 2 cm deep and 1·5 cm wide. In many galls there was a tendancy for the eggs to be laid near or in the apex of the 'flask' close to the mouth of the gall. Also dead adults were observed frequently squashed between the opposing surfaces of the mouth of the gall. It is possible that galls develop more slowly on *pendula* than on other species of *Acacia*, and this allows adults to enter and leave the developing evagination. Most of the young galls of this species which were examined contained both male and female thrips.

Froggatt refers to, and illustrates, heavily rugose galls in the original description of *rugosus*. Such galls were occasionally seen by the present author on *A. pendula* but they are apparently aberrant, the surface being attacked by some unidentified insect. Normal healthy galls caused by *rugosus* are quite smooth with the typical glaucous green of their host plant.

The female here selected as LECTOTYPE was found dry on a card in Froggatt's collection at Canberra. It appears to have come from the original collection on which the species was based as it was labelled in Froggatt's handwriting and was accompanied by the dry rugose galls shown in the original figure.

♀ bicoloured brown and yellow; brown on head and antennal I, prothorax, fore femur, anterior and lateral margins of pterothorax, mid and hind legs, and abdominal segments II–X; yellow on pelta, pterothorax, fore tarsi, fore tibiae and apex of fore femora, antennals II–VIII (Bagnall's description refers to the less mature specimens which are coloured as in *ellobus* above). With the morphological characters given in the generic definition and key to species above.

Measurements (in microns) of lectotype: Body length 2700. Head, length 310; width across eyes 150. Pronotal shield, length 330; median width 260; epimeral seta 30. Fore wing, length ?1000; number of duplicated cilia ?15. Tergite IX, B_1 45; B_2 58; B_3 100. Tube, length 190; terminal setae ?195. Antennal segments, length 35; 55; 52; 52; 50; 50; 55; 16.

♂ colour similar to female except pterothorax darker, little paler than prothorax.

Measurements (in microns) of one male. Body, length 2400. Head, length 280; width across eyes 130. Pronotal shield, length 270; median width 200; epimeral seta 28. Fore wing, length 800; maximum width 60; number of duplicated cilia 11. Tergite IX, B_1 32; B_2 45; B_3 80. Tube, length 160; terminal setae 150. Antennal segments length, 32; 42; 42; 42; 42; 42; 50; 16.

Material studied: LECTOTYPE ♀. New South Wales: Tamworth, in rugose gall on *Acacia* sp., 15.ii.1904 (*W. W. Froggatt*), in ANIC.

New South Wales: Yenda, 7 ♀, 3 ♂ in *Acacia pendula* galls, 9.ii.1927 (*McKewan*); Leeton, 4 ♀, 5 ♂, (*McKewan*), in ANIC; 19 miles south of Forbes, 3 ♀, 1 ♂ in *Acacia pendula* galls, 7.iii.1968 (*L. A. Mound* 528); 10 miles south of Parkes, 4 ♀, 3 ♂, in *A. pendula* galls, 8.iii.1968 (*L. A. Mound* 547); Trangie, 19 ♀, 14 ♂, in *A. pendula* galls, 7.iii.1968 (*L. A. Mound* 559); 10 miles south of Collie, 8 ♀, 7 ♂, in *A. pendula* galls, 7.iii.1968 (*L. A. Mound* 560); 11 miles north east of Walgett, 1 ♀ in *A. pendula* gall, 5.vi.1968 (*L. A. Mound* 662), in BMNH.

KOPTOTHRIPS Bagnall

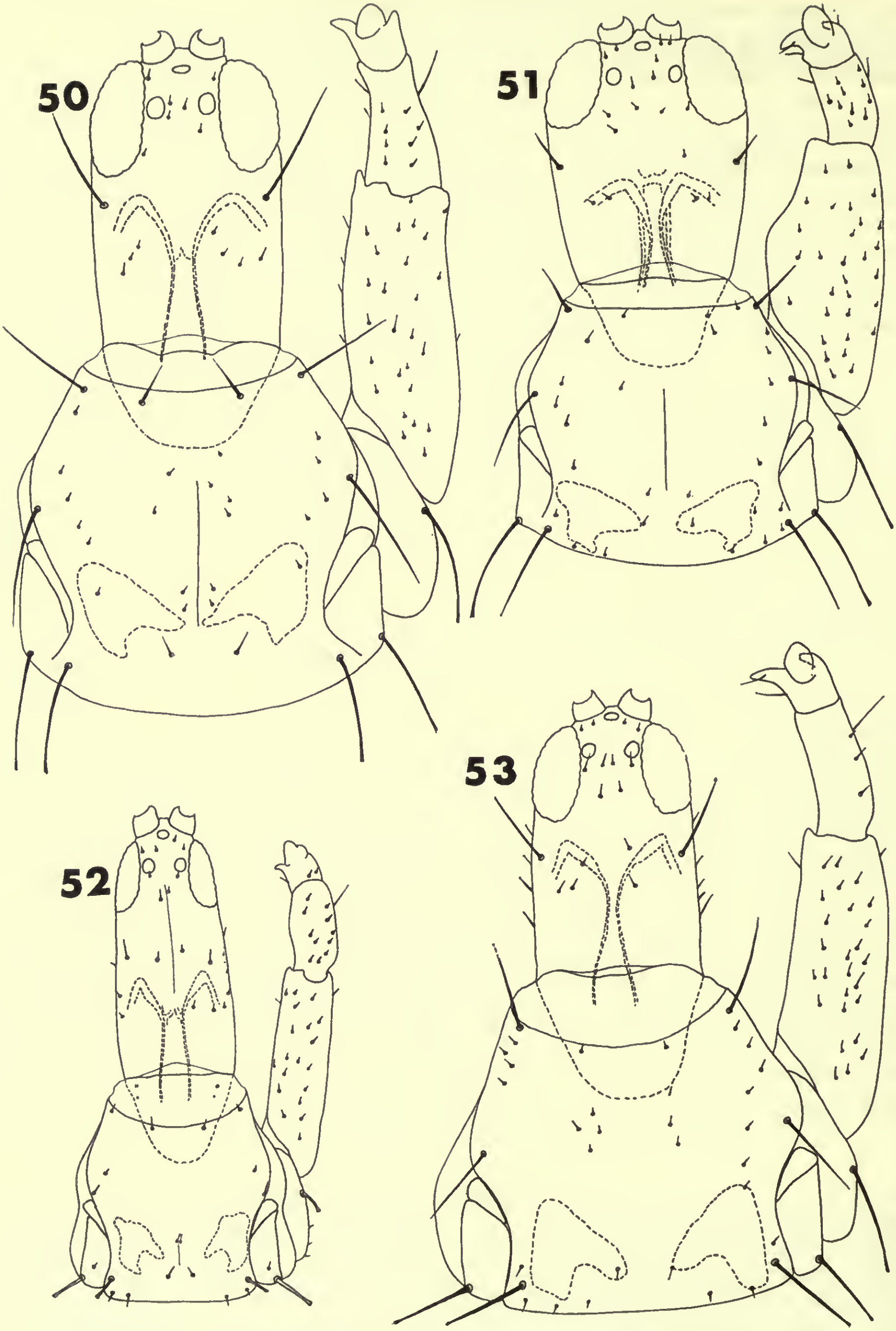
Koptothrips Bagnall, 1929*b* : 197. Type-species: *K. flavicornis*, by monotypy.
Sphaericothrips Moulton, 1968 : 115. Type-species: *Sphaerothrips* [sic] *clarapennis*, by monotypy. **Syn. n.**

Small to medium-sized, brown or bicoloured macropterous Phlaeothripinae, living as inquilines in thrips galls on *Acacia* phyllodes. Body with very little sculpture, pronotum smooth and polished in life. Head longer than wide; maxillary stylets retracted to postocular setae, maxillary bridge in middle of head; mouth cone short and rounded. Antennae eight-segmented, VII and VIII not closely united; III with one sense cone, IV with three sense cones. Pronotal shield broad, in large specimens a little longer than broad, epimeral sutures frequently not complete; anteromarginal setae usually not elongate; major setae slender, usually acute or rounded at apex. Praepectus absent, chitinous islets of prosternum very large; probasisternal plates with stout posterior margin; mesopraesternum very reduced, usually fused with anterior border of mesosternum. Mesonotal lateral setae well developed; metanotal median setae slender, usually long. Fore femur stout, fore tibia with an apical tubercle in one species; fore tarsus with a stout tooth and well developed ventrolateral hamus. Fore wing parallel-sided, with about 10–20 duplicated cilia; three sub-basal setae. Pelta broadly triangular; tergites II–VII with two pairs of wing-retaining setae; tergal posteroangular setae usually about as long as marginal B_1; tube slender, shorter than head, terminal setae shorter than tube. Sternites with a transverse row of accessory setae less than half as long as sternal marginals; male without glandular area on sternite VIII but with B_2 on tergite IX rather shorter than B_1.

The species *clarapennis*, for which Moulton erected the genus *Sphaericothrips*, is regarded here as a synonym of *flavicornis* Bagnall, the type-species of *Koptothrips*. Since the species of this genus live as inquilines in galls induced by *Kladothrips*, *Onychothrips* and *Oncothrips* species, it is reasonable to assume that *Koptothrips* and its species have evolved more recently than the gall-formers. Morphologically *Koptothrips* seems to be quite distant from other members of the Kladothripina. The fact that the apical suture of antennal segment seven is transverse, not oblique, so that segments seven and eight are quite separate indicates that this genus is on a distinct evolutionary line. Moreover, long slender major setae and incomplete epimeral sutures are not found elsewhere in the Kladothripina. However the antennal sense cone formula, the well developed fore tarsal tooth and the absence of the praepectal plates suggests that *Koptothrips* has been derived from similar ancestors as the other Kladothripina, i.e. a leaf-feeding, probably leaf-rolling, species of the *Teuchothrips* complex. The most closely related genus is possibly *Thaumatothrips* which lives in galls on *Casuarina cristata* twigs, but this has a series of tubercles on the fore femur. In the opinion of the present author *Koptothrips* does not belong in the Plectrothripini where Moulton placed *Sphaericothrips*.

KEY TO THE SPECIES OF *KOPTOTHRIPS*

1 Lateral margins of eyes converging to anterior (Text-fig. 52); antennae short, segment III as wide as long (Text-fig. 58), or up to 1·15 times as long as wide in large individuals; B_1 on tergite IX expanded at apex, less than half as long as tube; on *A. oswaldi*, *pendula*, and ?*melanoxylon* . . . . . . ***flavicornis*** (p. 429)
– Eyes normally rounded (Text-figs 50–51); antennal III usually more than 1·5 times as long as wide, in very small individuals 1·25 times as long as wide; B_1 on tergite IX at least two-thirds as long as tube 2



Figs 50–53. Head, pronotum and fore leg of *Koptothrips* species: 50, *zelus*. 51, *xenus*. 52, *flavicornis*. 53, *dyskritus*.

2 Inner margin of fore tarsus with basal tubercle as well as apical tooth (Text-fig. 51); median metanotal setae less than half as long as the distance between their bases; on *Acacia cambagei* . . . . **xenus** (p. 433)

– Fore tarsus without a basal tubercle; median metanotal setae more than two-thirds as long as the distance between their bases 3

3 Inner apex of fore tibia with a tubercle (Text-fig. 50); antennals VI & VII with straight sides, VI more than 1·9 times as long as wide except in very small individuals (Text-fig. 60); on *Acacia harpophylla* . . . . . **zelus** (p. 433)

– Fore tibia without a tubercle (Text-fig. 53); antennals VI & VII with convex sides, VI less than 1·75 times as long as wide (Text-fig. 61); on *A. pendula, aneura, & oswaldi* **dyskritus** (p. 430)

Koptothrips flavicornis Bagnall

(Text-figs 52, 58 & 62)

Koptothrips flavicornis Bagnall, 1929*b* : 197–198.
Koptothrips flavicornis Bagnall; Mound, 1968 : 130.
Sphaerothrips [sic] *clarapennis* Moulton, 1968 : 116–117. **Syn. n.**

Bagnall described this species as having the head increasing in width to the base, and it is interesting to note that Moulton described *clarapennis* in similar terms. However both these authors were studying single specimens which had been crushed in mounting. Recently collected specimens which have been mounted on to slides with insufficient balsam have their heads broad at the base, but specimens from the same series mounted correctly show that the head is slightly narrower at the base than medially (Text-fig. 52). The artificial condition described by both Bagnall and Moulton is readily produced by crushing because the head of this species is very deep, almost oval in cross section near the base. The postocular setae are acute, not expanded as Moulton figures.

The variation of this species is difficult to interpret because the available material is derived from a few restricted localities. The differences in colour and setal lengths may be due to relative isolation and inbreeding of each population, or these differences may indicate that the forms on *A. pendula* are specifically distinct from the forms on *A. oswaldi*. In the latter case both these forms might then be distinct from the nominal form which was collected in an area where *melanoxylon* is the dominant *Acacia* species. All the specimens from galls on *oswaldi* at Peak Hill, N.S.W. have postocular setae about 30μ long, the anterior part of the body is yellow, and B_2 on the ninth abdominal tergite is about 100μ, i.e. half as long as the tube. On the other hand specimens from galls on *pendula* near Forbes, N.S.W., have postocular setae about 16μ long, the body is all brown, and B_2 on tergite nine is about 65μ, i.e. just over one-third as long as the tube. The colour differences are almost certainly due to different degrees of maturity, but the differences in setal lengths suggests the presence of host-specific forms. A similar problem occurs in the new species *dyskritus* described below, which apparently lives on three different host species and shows variation in the setae behind the eyes and on tergite nine.

♀ macropterous. Colour brown with yellow-brown fore tibiae, fore tarsi, and antennals III–VIII; many specimens have pronotum, fore legs, and most of head yellow, and dorsal surface of pterothorax yellow-brown; fore wings clear, cilia dark; major setae pale.

With the morphological characters given in the generic definition and key to species above. Head devoid of sculpture except at extreme base. Pronotal epimeral sutures complete or incomplete, even on one individual; anteromarginal setae about 10μ, anteroangular setae about 20μ, midlateral setae about 30μ, all acute at apex; posteroangular and epimeral setae expanded at apex, 50–60μ; prosternal chitinous islets up to 5μ in diameter. Metanotum faintly reticulate anterolaterally. Fore wing sub-basal setae B_1 and B_2 expanded, B_3 longer and acute.

Measurements (in microns) of one ♀ from Peak Hill with one ♀ from Forbes in parentheses. Body length 2250 (2200). Head, length 280 (280); median width 145 (130); postocular seta 26 (16). Pronotal shield, length 200 (195); median width 240 (210); epimeral seta 58 (32). Mesonotal lateral seta 35 (22). Metanotal median seta 65 (50). Fore wing, length 850 (800); distal width 70 (65); sub-basal setae 42, 45, 100 (28, 28, 80); number of duplicated cilia 10–12. Tergite IX, B_1 58 (50); B_2 80 (65); B_3 85 (65). Tube, length 150 (160); basal width 65 (65); terminal setae 115 (130). Antennal segments length, 26; 39; 32; 35; 32; 32; 32; 19.

♂ macropterous. Colour and structure very similar to female, body length rather smaller, about 1800μ. Tergite IX setae B_1 and B_2 of one ♂ from Peak Hill 74μ and 53μ; of one ♂ from Forbes 48μ and 50μ.

MATERIAL STUDIED. Holotype ♂. VICTORIA: Gippsland, on *Acacia* sp. (*C. French*), in BMNH.

Holotype ♀ of *clarapennis*. NEW SOUTH WALES: Yenda, Leeton, on Boree [*A. pendula*], 8.ii.1927 (*W. W. Froggatt*), in California Academy of Sciences (Moulton No. 1706).

NEW SOUTH WALES: Peak Hill, 12 ♀, 2 ♂ in small poorly developed galls containing dead *Oncothrips tepperi* on *Acacia oswaldi* phyllodes, 8.iii.1968 (*L. A. Mound* 569); 19 miles south of Forbes, 5 ♀, 1 ♂ in galls on *A. pendula*, 6.vi.1968 (*L. A. Mound* 677); Trangie, 2 ♀ in galls on *A. pendula* containing dead *Kladothrips rugosus* and live caterpillars, 7.iii.1968 (*L. A. Mound* 555–556); 23 miles south of Gilgandra, 9 ♀, 2 ♂ in small flat gall on *A. pendula*, 6.vi.1968 (*L. A. Mound* 674), in BMNH; Ungarie, 2 ♀, 1 ♂ in galls on Milgee [*A. oswaldi*] or Rosewood, 5.ix.1926, in ANIC. SOUTH AUSTRALIA: Loxton, 1 ♀ in gall on *A. oswaldi*, 30.x.1967 (*L. A. Mound* 393), in BMNH. QUEENSLAND: 16 miles south east of Eulo, 1 ♀ on *A. oswaldi*, 23.x.1948, in ANIC.

***Koptothrips dyskritus* sp. n.**

(Text-figs 53 & 61)

♀ macropterous. Colour dark brown, fore tarsi, fore tibiae and apices of fore femora yellow with brown shadings; antennals III–VIII yellow with brown area dorsally in distal half, VII and VIII sometimes brownish yellow; fore wings pale, cilia dark; major setae pale, terminal setae of tube dark at base.

With the morphological characters given above in the generic definition and key to species. Head without sculpture; postocular setae acute, almost as long as eye (Text-fig. 53). Pronotal anteroangular, midlateral and posteroangular setae acute, longer than postoculars, epimeral setae shorter with apex rounded or weakly expanded. Epimeral sutures complete; mesopraesternal plates not fused to mesosternum. Mesonotal midlateral setae expanded, metanotal median setae long and acute. Fore wing sub-basal seta B_3 long and acute. Tergite IX B_1 and B_2 weakly expanded.

♂ macropterous. Colour and structure very similar to ♀; B_2 on tergite IX shorter than B_1.

This description is based on a long series of remarkably uniform individuals taken from a single gall on *A. pendula*. A series collected from a gall on *A. aneura* shows a number of differences; the antennae are more uniformly yellow-brown, without the dark area on III and IV, and increasingly dark toward the apical segments; the postocular setae and the pronotal anteroangular, midlateral and posteroangular setae are not acute but softly rounded at the apex; B_1 and B_2 on tergite nine are softly rounded, i.e., less expanded than in the *pendula* series. Moreover, specimens collected from galls on *A. oswaldi* have the postocular setae acute and about half as long as the eye but the pronotal setae as in the *aneura* series; B_1 and B_2 on tergite nine weakly expanded as in the *pendula* series; antennal segments III–VII with a brown area distally at least on the dorsal surface.

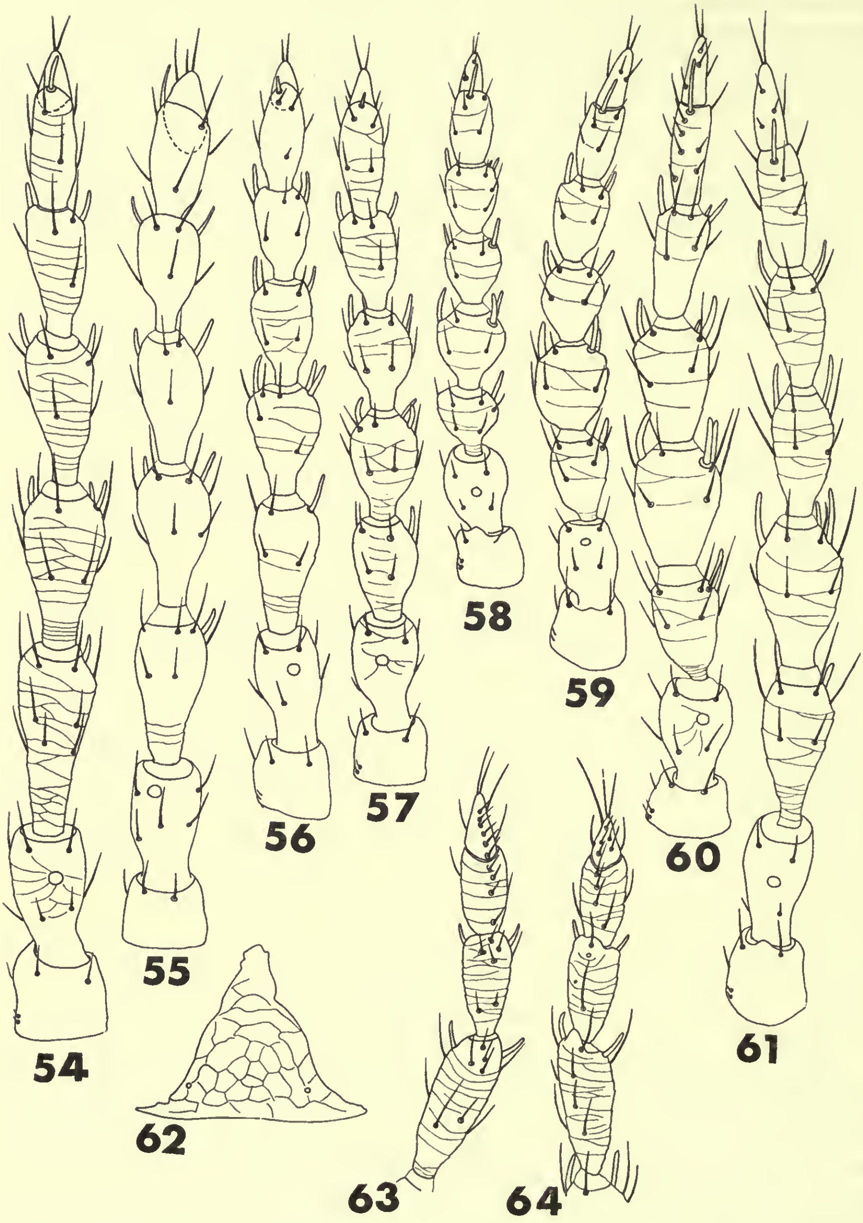
It is not possible on the available series to decide if these forms are truly host-specific species or sub-species, or if the observed differences are merely the result of normal inter-gall variation. A few specimens are available from other localities and these indicate that the form of the apices of the pronotal major setae and the length of the postocular setae are not constant on *A. pendula*. Because of these specimens the author inclines to the view that *dyskritus* is a variable and polyphagous species, although further collecting may result in a different opinion. The smallest female of *dyskritus* (body length 2300) which has been studied is very similar to the largest available specimen of *flavicornis*.

Measurements (in microns) of holotype ♀ with allotype ♂ in parentheses. Body length 3650 (3150). Head, length 370 (320); median width 240 (225); postocular seta 100 (80). Pronotal shield, length 370 (320); median width 480 (450); anteroangular seta 140 (120); epimeral seta 140 (130); posteroangular seta 200 (175). Mesonotal midlateral seta 85. Metanotal median seta 190. Fore wing, length 1400 (1200); distal width 100 (95); sub-basal setae 95; 155; 210; number of duplicated wing cilia 20 (16). Tergite IX, B_1 185 (160); B_2 177 (95); B_3 177 (167). Tube, length 225 (210); terminal setae 240 (260). Antennal segments length, 32; 65; 68; 77; 65; 58; 63; 48 (32; 58; 68; 74; 65; 58; 65; 42).

MATERIAL STUDIED. Holotype ♀. NEW SOUTH WALES: 19 miles south of Forbes, in gall on *Acacia pendula*, 8.iii.1968 (*L. A. Mound* 538), in ANIC.
Allotype ♂ with 77 ♀, 3 ♂ paratypes in same gall as holotype.

NEW SOUTH WALES: 10 miles south of Parkes, 7 ♀, 2 ♂ in galls on *A. pendula*, 8.iii.1968 (*L. A. Mound* 540 & 541); Trangie, 1 ♀ in gall on *A. pendula*, 7.iii.1968 (*L. A. Mound* 558); Peak Hill, 6 ♀, 2 ♂ in galls on *A. oswaldi*, 8.iii.1968 (*L. A. Mound* 566), in BMNH; Leeton, 3 ♀, 1 ♂ in galls on *A. pendula*, 1927 (*K. McKewan*), in ANIC. SOUTH AUSTRALIA: Loxton, 10 ♀, 19 ♂ & 3 ♀, 1 ♂ in two galls on *A. oswaldi*, 7.iii.1968 (*R. Brewer*), in BMNH. NORTHERN TERRITORIES: Ayers Rock, 23 ♀, 1 ♂ in spherical gall on *A. aneura*, 24.x.1967 (*L. A. Mound* 289 s7), in BMNH; Alice Springs, 2 ♀ on *A. aneura*, 25.vi.1957 (*C. E. Chadwick*), in ANIC.

This species enters and breeds in the galls of other thrips species only after such galls have been attacked by a lepidopterous caterpillar. The galls from Peak Hill and Loxton on *A. oswaldi* were attacked by two different species of Cosmopterygidae (det. I. Common), and *K. dyskritus* was only found in galls containing frass and dead primary gall-forming thrips.



FIGS 54–64. 54–57. Antenna of *Kladothrips* species: 54, *acaciae*. 55, *augonsaxxos*. 56, *ellobus*. 57, *rugosus*. 58–61. Antenna of *Koptothrips* species: 58, *flavicornis*. 59, *xenus*. 60, *zelus*. 61, *dyskritus*. 62. Pelta of *Koptothrips flavicornis*. 63–64. *Kellyia* species, distal antennal segments: 63, *hoodianus*. 64, *biadenes*.

Koptothrips xenus **sp. n.**

(Text-figs 51 & 59)

♀ macropterous. Colour brown, increasingly dark toward posterior; head light brown; mid and hind legs dark brown, fore femora golden, fore tibia, fore tarsi and antennae yellow; fore wings pale with dark cilia; major setae pale, except dark terminal setae.

With the characters given above in the generic definition and key to species. Anterior margin of head transverse, antennal insertions barely ventral (Text-fig. 51); postocular setae about half as long as eye. Pronotal setae blunt or expanded at apex; epimeral sutures incomplete; fore tarsus with a distinct tubercle at base just above insertion into tibia. Mesopraesternal plates almost fused to anterior margin of mesosternum. Median metanotal setae short. Anterior margin of pelta transverse. Tergite IX with B_1 and B_2 softly rounded at apex.

♂ macropterous. The only available male is in fragments, but the fore tarsus is similar to that of the female.

Measurements (in microns) of holotype ♀. Body length 2800. Head, length 290; median width 230; postocular seta 55. Pronotal shield, length 290; median width 310; anteroangular seta 70; posteroangular seta 115. Metanotal median seta 32. Fore wing, length 1000; distal width 95; sub-basal setae 65, 65, 65; number of duplicated cilia 16. Tergite IX, B_1 130; B_2 135; B_3 115. Tube, length 190; terminal setae 175. Antennal segments length, 32; 45; 50; 50; 39; 39; 44; 36.

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: 20 miles north of Durham Downs (30 miles south east of Lake Yamma Yamma), in *Kladothrips ellobus* gall on *A. cambagei*, 13.ii.1968 (*R. Lewis*), in ANIC.

Allotype ♂ and 4 ♀ were taken with the holotype.

Koptothrips zelus **sp. n.**

(Text-figs 50 & 60)

♀ macropterous. Colour dark brown, fore tibiae and tarsi and apex of fore femora yellow; antennals III–VI and apex of II yellowish, VII, VIII and apex of V and VI light brown; fore wings clear, cilia dark; major setae pale except terminal setae of tube.

Postocular setae slender, almost as long as eye; antennal segments angular in profile. Pronotal anteromarginal setae well developed, two-thirds as long as anteroangulars; epimeral sutures not complete; fore tibia with apical tubercle on inner margin extending into flange around ventral surface of tibial apex (Text-fig. 50). Tergite IX B_1 and B_2 with broadly rounded apices.

♂ macropterous. Colour and structure similar to female but smaller; B_2 on tergite IX shorter than B_1.

Measurements (in microns) of holotype ♀ with allotype ♂ in parentheses. Body length 3600 (2400). Head, length 385 (275); median width 240 (205); postocular seta 125 (100). Pronotal shield, length 425 (275); median width 420 (340); posteroangular seta 175 (135). Mesonotal midlateral seta 80 (70). Metanotal median seta 160 (100). Fore wing, length 1450; distal width 115; sub-basal setae 115, 145, 225; number of duplicated cilia 21. Tergite IX, B_1 225 (140); B_2 195 (90); B_3 195 (140). Tube, length 275 (145); terminal setae 245 (140). Antennal segments length, 32; 52; 55; 62; 58; 65; 58; 35 (32; 45; 42; 42; 39; 42; 39; 23).

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: 50 miles south west of Dalby, in bean-shaped phyllode gall on *Acacia harpophylla*, 16.vii.1968 (*L. A. Mound* 775), in ANIC.

Allotype ♂ and 5 ♀ paratypes, taken in same gall as holotype with numerous larvae.

QUEENSLAND: 50 miles SW of Dalby, 15 ♀ in phyllode gall on *A. harpophylla*, 16.vii.1968 (*L. A. Mound* 776); Moonie, 57 ♀ in phyllode gall on *A. harpophylla*, 16.vii.1968 (*L. A. Mound* 732), in BMNH; Millmerran, 38 ♀, 4 ♂ in bean-shaped galls on Brigalow, 8, 10, 16. viii.1928, & 3, 10. ix. 1928 (*J. McQueen*), in ANIC.

The observed variation in body size of this species is small but this is probably due to the few samples which are available. However one female out of a gall containing about one hundred females and no males taken at Moonie was much smaller than all the other specimens, the body length being 2500μ. The antennae of this female are shorter and the segments more rounded than normal, similar to the antennae of *xenus* but with a longer sixth segment.

K. zelus is discussed above under *Kladothrips acaciae*. The large bean-shaped galls in which *zelus* was collected by the author were apparently healthy, and in the field this species was assumed to be the primary gall producer. However, because three species of *Kladothrips* are known to be gall-producers and three species of *Koptothrips* are known to be inquilines, it is reasonable to assume that *zelus* is an inquiline in the galls of *acaciae*. *Koptothrips flavicornis* enters galls of *Oncothrips tepperi* on *Acacia oswaldi* which have been attacked by caterpillars, and field observations suggest that *flavicornis* is unable to stimulate continued growth of such galls. In view of the healthy condition of the galls in which *zelus* was taken it is possible that this species of *Koptothrips* can stimulate the continued growth of galls on *A. harpophylla*.

LICHANOTHRIPS gen. n.

Type-species: *Lichanothrips albus* sp. n.

Large macropterous species of Phlaeothripinae. Head projecting slightly in front of eyes; cheeks weakly incut behind eyes, constricted at base, sometimes with several pairs of pale setae; eyes larger on dorsal than on ventral surface; ocelli not directed forwards; posterior margin of head with median cleft; mouth cone very short and rounded; maxillary stylets wide apart, very low in head. Antennae eight-segmented, I longer than II, VIII less than half as long as VII; one sense cone on III, three sense cones on IV. Pronotal shield flat with stout median apodeme, epimeral sutures complete; major setae weakly developed, epimeral setae short and stout; praepectus small, mesopraesternum reduced to two triangular plates, probasisternum large; fore tarsal tooth longer than tarsal width in both sexes. Fore wings very broad, duplicated cilia present, apical cilia short; sub-basal setae short, arranged in a triangle. Mesonotal furrow less than one-third of median length, midlateral setae not developed. Metanotal median setae small; median area of metanotum between setae weakly reticulate. Pelta rectangular; tergites with a median longitudinal ridge anterior to deeply concave antecostal ridge; lateral margins of tergite II with several short stout setae; tube shorter than head, terminal setae and major setae on tergite IX shorter than tube with acute apices. Sternite VIII of ♂ with or without glandular area; sternal accessory setae very small, several additional accessory setae present anterior to the usual transverse row; sternal marginal B_2 and B_3 of females frequently thorn-like; male genitalia with navicula drawn out into a sharp point.

This new genus is readily distinguished from the rest of the Phlaeothripinae by the position of the maxillary stylets. The only species in which the stylets do not extend into the head for most of their length are small forms living in leaf-litter which are related to *Sophiothrips* (see Mound, 1970*a*), the grass-living genus *Antillo-*

thrips and the Australian species *Panoplothrips australiensis* Moulton, 1968. *Lichanothrips* and *Panoplothrips* have similar heads, meso- and metanota, and short major setae, but the latter genus is distinguished by the absence of fore wing duplicated cilia, the large tubercle on the fore femur, the single pair of wing-retaining setae on tergite eight, and the presence of only two sense cones on antennal segment four. *Grypothrips* is probably related, particularly as *G. clavisetae* has a pair of stout cheek setae, and *L. semifuscipennis* has a small *Grypothrips*-like probasisternum. However the fore wings of *Lichanothrips* species are exceptionally broad distally, and in *Grypothrips* the maxillary stylets are parallel to each other low in the head, and the navicula of the male genitalia has a rounded apex.

Paracholeothrips Moulton, 1968 has a similar head shape but the stylets are close together in the middle of the head. Moreover in this genus the mesonotum is divided longitudinally, there are two sense cones on the third antennal segment, and the fore wings apparently lack duplicated cilia. *Lichanothrips* and *Panoplothrips* may have to be placed in a separate tribe, although they are related to *Grypothrips* and even *Akainothrips*. The *Csirothrips* group of genera may also be derived from related ancestors, which also gave rise to the Kladothripina. None of these genera can be related on present knowledge to forms from outside Australia. The new generic name is derived from the Greek *lichanos*—fore finger, in reference to the fore tarsal tooth.

KEY TO THE SPECIES OF *LICHANOTHRIPS*

1 Body white, cuticle without pigment except on antennals III–VIII and terminal setae of tube; postocular setae very small (Text-fig. 67); tergite wing-retaining setae reduced, anterior pair usually absent, posterior pair short and straight; ♂ without glandular area on sternite VIII . . . . . . **albus** (p. 437)

– Body brown, legs sometimes yellow; postocular setae well developed; two pairs of sigmoid wing-retaining setae on tergites II–V, these setae usually reduced on VI–VII; ♂ with glandular area on sternite VIII in *pulchra* & *shakespearella* . . 2

2 Head elongate, more than twice as long as width at postocular setae (Text-fig. 66), about 1·25 times as long as pronotum in ♀; fore tarsal tooth very long and slender, distinct from apex of tibia; posteroangular seta of sternites V–VIII short and stout, on tubercles which are longer than the setae (Text-fig. 90) **magnificus** (p. 437)

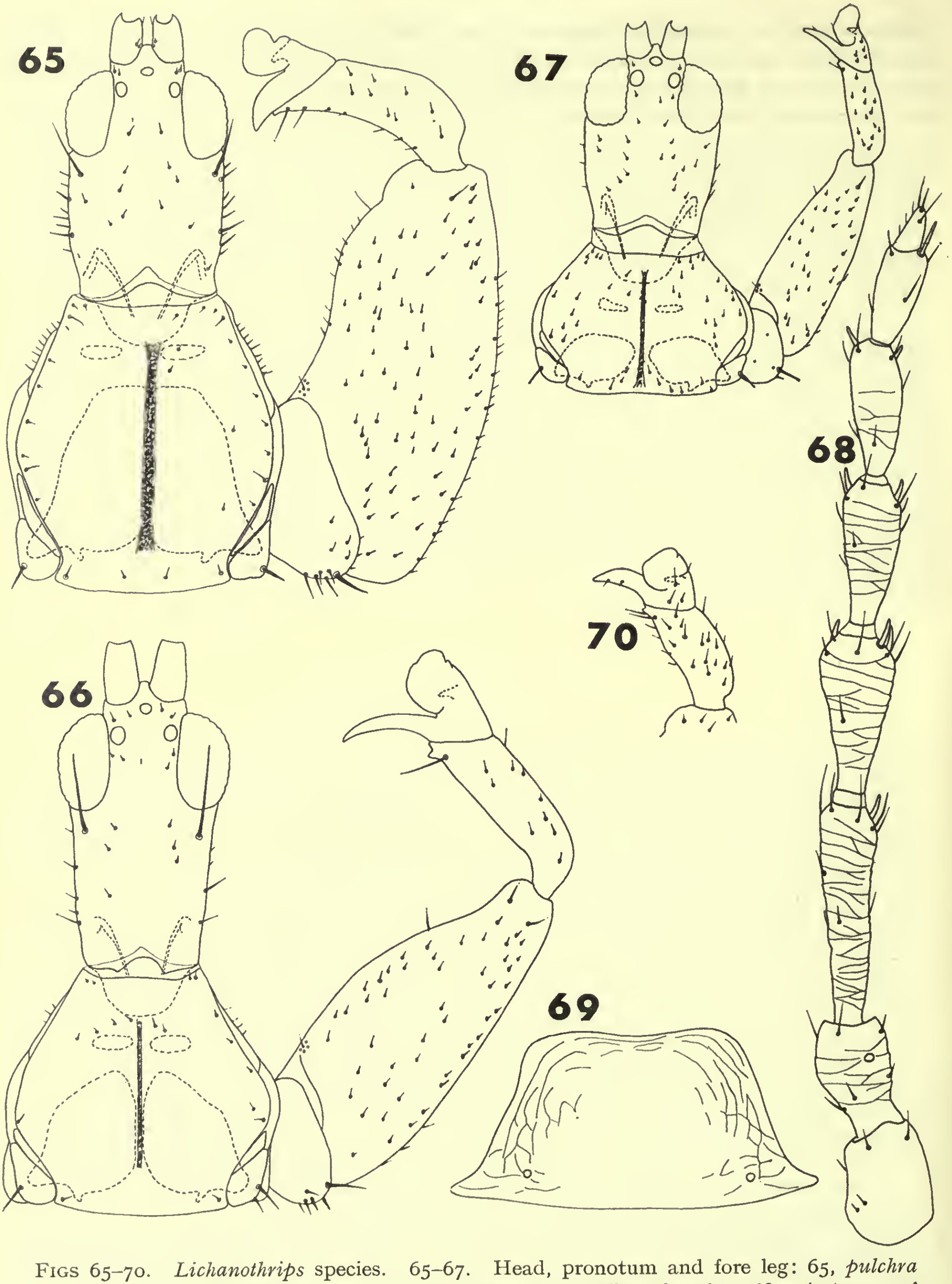
– Head less than 1·8 times as long as median width, in ♀ shorter than pronotum or about as long; fore tarsal tooth stout, close to drawn out apex of tibia; posteroangular setae of sternite shorter than the small papillae on which they arise . . . 3

3 Probasisternal plates wider than long; lateral margins of abdominal segments III–V without large median tubercles; fustis in abdominal segment IX of ♀ broad and plate-like as in *Grypothrips* . . . . **semifuscipennis** (p. 438)

– Probasisternal plates elongate, median margins clearly parallel, occupying most of prosternum; lateral margins of abdominal segments III–V with a pair of large tubercles; fustis in abdominal segment IX of ♀ rod-like 4

4 Head with cheeks distinctly convex; head of ♀ less than 1·65 times as long as wide (Text-fig. 65) . . . . **pulchra** (p. 438)

– Head with cheeks concave; head longer, in ♀ 1·75 times as long as wide **shakespearella** (p. 439)



Figs 65–70. *Lichanothrips* species. 65–67. Head, pronotum and fore leg: 65, *pulchra* large female. 66, *magnificus*, holotype female. 67, *albus*, female. 68. Antenna of *albus*. 69. Pelta of *albus*. 70. Fore tibia and tarsus of *semifuscipennis*.

Lichanothrips albus sp. n.

(Text-figs 67–69)

♀ macropterous. Colour white, some specimens shaded pale brown between the eyes; red pigment in eyes and ocelli; antennal VIII and apices of III–VII brown; wings pale, cilia yellowish; major setae pale except dark brown terminal setae on tube.

With the characters given in the generic definition and key to species. Surface of head with faint transverse striations, with indistinct sculpture only at base; cheek setae present in some individuals (Text-fig. 67). Antennal III with furrow on inner margin (Text-fig. 68); sense cones short and broad. Pronotal major setae not distinct from microsetae, except for epimerals. Probasisternum wider than long. Fore femur not enlarged; fore tibia simple; fore tarsal tooth very long and slender (Text-fig. 67). All three sub-basal wing setae short. Wing-retaining setae short and straight, posterior pair 30μ long, anterior pair not distinct from tergal lateral setae; tube weakly constricted at apex and sub-basally. Sternite accessory setae less than 10μ medially, up to 15μ laterally.

♂ macropterous. Colour and structure similar to female; fore tarsal tooth rather smaller; tergite IX B3 reduced; navicula of genitalia with elongate acute apex.

Measurements (in microns) of holotype ♀ with allotype ♂ in parentheses. Body length 3600 (3700). Head, length 415 (385); median width 310 (270); postocular seta 16. Pronotal shield, length 305 (285); median width 435 (400); epimeral seta 45 (40). Fore wing, length 1650 (1500); distal width 320 (320); sub-basal setae 30–35; number of duplicated cilia 14–16. Tergite IX, B1 350 (305); B2 300 (240); B3 260 (160). Tube, length 370 (275); terminal setae 360 (350). Antennal segments length, 80; 70; 152; 104; 90; 84; 80; 32 (72; 68; 135; 97; 90; 80; 70; 30).

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: 50 miles south west of Dalby, in between tied green phyllodes of *Acacia harpophylla*, 16.vii.1968 (*L. A. Mound* 734), in ANIC.

Allotype ♂ with 12 ♀, 1 ♂ paratypes collected from similar phyllodes on same group of trees as holotype, in ANIC and BMNH.

This species is remarkable among leaf-feeding Tubulifera in the almost complete absence of cuticular pigment. It was collected between pairs of tied phyllodes on *Acacia harpophylla* in association with *Lichanothrips pulchra*, *L. magnificus*, *Akainothrips citritarsus*, and the two species of *Xaniothrips* described below. There was no evidence that the phyllodes were tied together by lepidopterous larvae and the author has suggested below that the *Xaniothrips* species were responsible for sticking the phyllodes together with a secretion.

Lichanothrips magnificus sp. n.

(Text-figs 66 & 90)

♀ macropterous. Colour golden brown, dark brown on pterothorax, median longitudinal part of head, tube and last two abdominal segments, also median part of anterior abdominal segments and mid and hind legs; antennae yellow, III–VII with brown apices; distal half of fore wing shaded; major setae light brown, terminal setae of tube dark.

With the characters given above in the generic definition and key to species.

Measurements (in microns) of holotype. Body length 8000. Head, length 760; width at postocular setae 350. Pronotal shield, length 620; median width 660. Fore wing, length 3200; distal width 600; number of duplicated cilia 36. Sternite VII, posteroangular tubercle 60. Tergite IX, B1–B3 450. Tube, length 600. Antennal segments length, 150; 110; 290; 200; 180; 150; 100; 50.

Material studied. Holotype ♀. Queensland: 50 miles south west of Dalby, in between tied green phyllodes of *Acacia harpophylla*, 16.vii.1968 (*L. A. Mound* 734), in ANIC.

The unique holotype of this species was collected with a series of both sexes of *pulchra* Girault, and at first it was thought to be an oedymerous individual of that species. However large females of *pulchra* have greatly broadened fore femora, whereas these are almost slender in *magnificus* (Text-figs 65 & 66). Moreover the pronotum is unusually short in this unique specimen, and the fore tarsal tooth is very similar to that of *albus* described above.

Lichanothrips pulchra (Girault) **comb. n.**

(Text-figs 65 & 89)

Adiaphorothrips pulchra Girault, 1927 (35) : 2.

Girault's holotype of this species is a teneral male but this has been compared with the series of both sexes listed below. This species is very similar to *shakespearella* but has a shorter broader head, particularly in the females and small males. The colour of the series from near Dalby varies from golden to dark brown, but the fore legs of the female are usually golden.

Measurements (in microns) of large and small female. Head, length 650 (580); median width 400 (370). Antennal III 260 (230). Pronotal shield, length 760 (600). Tube, length 540 (480).

Measurements (in microns) of holotype and a small male. Head, length 530 (500); median width 330 (290). Antennal III, 190 (180). Pronotal shield length 460 (380). Tube, length 340 (320).

Material studied. Holotype ♂. Queensland: Wowan, in brigalow forest, 12.iv.1923 (*A. Girault*), in Queensland Museum.

Queensland: 50 miles south west of Dalby, 7 ♀, 3 ♂ in green tied phyllodes of *Acacia harpophylla*, 16.vii.1968 (*L. A. Mound* 734), in BMNH.

Lichanothrips semifuscipennis (Girault) **comb. n.**

(Text-fig. 70)

Adiaphorothrips semi-fuscipennis Girault, 1926 (34) : 1.

As is discussed above, this species shows similarities to the genus *Grypothrips*. It can be distinguished from the other members of *Lichanothrips* by the characters given in the key.

Material studied. Holotype ♀. Queensland: Rosewood, on Brigalow 8.viii.1924 (*A. Girault*), in Queensland Museum.

Queensland: Rockhampton, 1 ♀ in forest, 13.iv.1923 (*A. Girault*), in Queensland Museum.

Lichanothrips shakespearella (Girault) **comb. n.**

Adiaphorothrips shakespearella Girault, 1927 (35) : 2.

This species was based on a male and female apparently collected with *Grypothrips curiosus*. These specimens are intermediate between *pulchra* and *magnificus* but can be distinguished by means of the key above.

Measurements (in microns) of syntype female. Head, length 610; median width 350. Antennal III, 210. Pronotal shield, length 590. Tube, length 470.

MATERIAL STUDIED. Syntype ♀ & ♂. QUEENSLAND: Wallumbilla, 17.x.1923 (*A. Girault*), in Queensland Museum.

QUEENSLAND: Wowan, 1 ♀ in forest, 12.iv.1923 (*A. Girault*), in Queensland Museum.

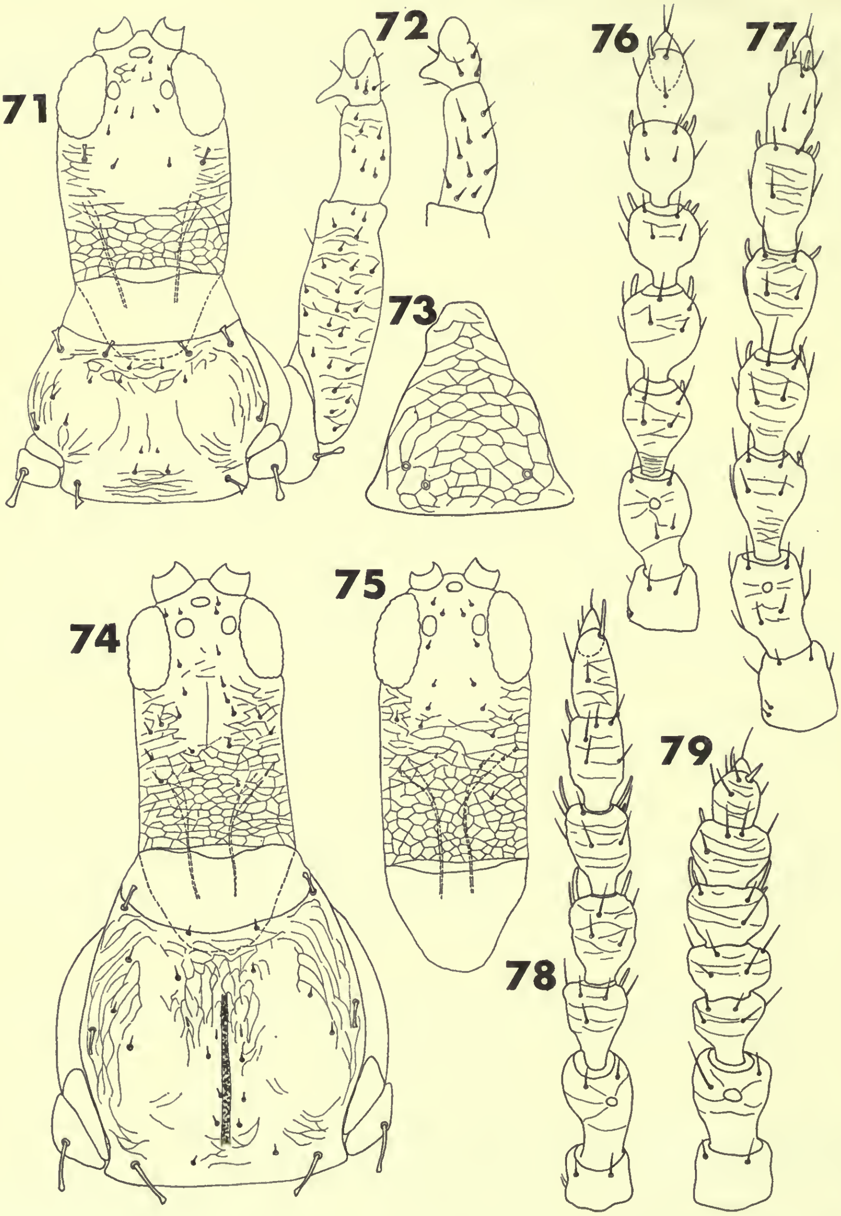
ONCOTHRIPS Karny

Oncothrips Karny, 1911 : 567–568. Type-species: *O. tepperi* Karny, by monotypy.
Brithothrips Moulton, 1942 : 8. Type-species: *B. fuscus*, by monotypy. **Syn. n.**
Diplonychothrips Moulton, 1968 : 103. Type-species: *D. antennatus*, by monotypy. **Syn. n.**

Dark brown, usually macropterous, species of Phlaeothripinae causing galls on *Acacia* phyllodes. Head longer than wide, postocular and pronotal setae hyaline, short and expanded, frequently absent. Maxillary stylets low in head, not meeting medially; mouth cone short and rounded. Antennae eight-segmented, III with one sense cone, IV with two sense cones; IV–VI with sharply constricted basal neck; VII weakly constricted at base, closely joined to VIII. Pronotal shield wider than long, epimeral sutures complete; praepectus absent, mesopraesternum absent medially; fore femur moderately swollen; fore tibia without apical tubercle; fore tarsus with a stout tooth in both sexes, but this is larger in females. Mesonotal lateral setae expanded; metanotal medial setae short and finely acute. Fore wings pale, evenly wide, with two or three expanded sub-basal setae and 10–15 duplicated cilia. Pelta elongate triangular but with lateral margins frequently sinuous; tergites II–VII with two pairs of sigmoid wing-retaining setae; posteroangular seta on tergites II–VI much shorter than B_1 marginal seta; tergite IX with B_1 and B_2 subequal and expanded in both sexes, B_3 longer and usually acute. Tube shorter than head, evenly narrowed to apex, terminal setae about as long as tube. Sternites with median transverse row of about 15 accessory setae, these setae about half as long as median marginals; male sternite VIII with circular glandular area.

Oncothrips is related to *Kladothrips* but has a more slender fore tibia, which lacks an apical tubercle. Moreover the pronotum is not longer than wide, the males have a large glandular area on sternite eight and there are only two sense cones on the fourth antennal segment. Some species of *Katothrips*, the new genus described above, show similarities to *Oncothrips* species, but they have a well developed maxillary bridge and the fore wings lack duplicated cilia.

Brithothrips was erected for a single species, *fuscus*, which is discussed below as a synonym of *tepperi* Karny. *Diplonychothrips* can be distinguished from *Oncothrips* by the presence of a full set of five pronotal major setae and the rather shorter head. However the males of the type-species *antennatus* sometimes lack anteromarginal setae, and in *rodwayi* the postocular and pronotal setae are not constant in their development. Moreover the new species described below, *habros*, has a head and fore tarsus similar to *antennatus* but has very reduced pronotal setae.



Figs 71–79. *Oncothrips* species: 71, *antennatus*, head, pronotum and fore leg of female. 72, *antennatus*, fore tibia and tarsus of male. 73, pelta of *rodwayi*. 74, *tepperi*, head and pronotum of micropterous female. 75, *tepperi*, head of macropterous female. 76–79. Antennae: 76. *antennatus*. 77. *rodwayi*. 78, *tepperi*, macropterous female. 79, *tepperi*, micropterous female.

The variation within *Oncothrips* is very confusing. Short winged, oedymerous forms are not uncommon in *tepperi* but have not been found in other species. However a single dwarf or extreme gynaecoid specimen has been studied of both *antennatus* and *rodwayi*, and further collections will surely increase the known range of variation. Because of this variation as well as the sexual dimorphism of the fore tarsal tooth the following key must be regarded as provisional.

KEY TO THE SPECIES OF *ONCOTHRIPS*

1 Cheeks parallel or weakly concave (Text-figs 74 & 75), extreme gynaecoid individuals may have convex cheeks but these have the fore tarsal tooth about as broad as long . . . 2

– Cheeks convex (Text-figs 42 & 71); female with fore tarsal tooth slender, about twice as long as basal width 3

2 Maxillary stylets 1/3–1/5th of head width apart; tube relatively long, ♀ tube about 0·8 of head length, ♂ tube about 0·7 of head length; postocular setae sometimes expanded at apex; lateral margins of pelta sinuate; in galls on *A. melanoxylon* **rodwayi** (p. 443)

– Maxillary stylets closer together, 1/7–1/9th of head width apart; tube shorter, macropterae—♀ tube 0·65 of head length, ♂ tube 0·5 of head length; micropterae—♀ tube 0·55 of head length, ♂ tube 0·45 of head length; postocular setae never expanded at apex; lateral margins of pelta usually not sinuate; in galls on *A. oswaldi* et alia . . . . **tepperi** (p. 444)

3 Pronotum of female with five pairs of major setae, anteromarginals sometimes reduced in ♂; postocular seta usually developed (Text-fig. 71); in galls on *A. aneura* **antennatus** p. 441)

– Pronotum of female with only epimeral setae well developed; postocular seta absent (Text-fig. 42) . . . . **habrus** (p. 442)

Oncothrips antennatus (Moulton) **comb. n.**

(Text-figs 71, 72 & 76)

Diplonychothrips antennatus Moulton, 1968 : 103–104.

This species is unusual in the *Kladothrips* group in having a complete set of pronotal major setae. *Rhopalothripoides* may be related but this is not certain as no macropterous specimens are known of the only species. *O. antennatus* is widespread in Central Australia and probably occurs throughout the area occupied by its host plant Mulga (*A. aneura*). The galls produced by this species are elongate pouched-shaped, similar to the galls of *tepperi* and *rodwayi* but about one inch long and almost tubular. Some of the galls contained over three hundred individuals. The contents of two galls collected 43 miles west of Alice Springs were 140 ♀, 8 ♂, 150 larvae and 210 ♀, 10 ♂, 200 larvae. This excess of females over males was found quite commonly in this species, but one gall collected near Ayers Rock contained 120 ♂, 100 larvae and no females at all. This suggests that males are produced parthenogenetically in *antennatus*, and that the contents of this gall were produced by an unfertilised female.

Some of the females collected near Eulo in Queensland had their abdominal intersegmental membranes expanded, but not as greatly as is recorded in *Kladothrips augonsaxxos* and the *Onychothrips* species. The tubular galls of *antennatus* are apparently more easily entered by inquiline species than spherical galls. A species of Chloropid fly was reared from tubular galls collected near Alice Springs and also at Ayers Rock.

♀ macropterous. Colour brown to dark brown; fore tibiae yellow distally, fore tarsi and antennal III yellow; wings and major setae pale, wing cilia dark; terminal setae of tube dark. With the morphological characters given in the generic definition and key to species above.

Measurements (in microns) of one ♀ from near Alice Springs. Body length 2500. Head, length 240; maximum width 180; postocular seta 30. Pronotal shield, length 165; median width 270; epimeral seta 50. Fore wing, length 900, distal width 100; sub-basal setae 28–32; number of duplicated cilia 11. Tergite IX, B_1 60; B_2 70; B_3 100. Tube, length 225; basal width 93; terminal setae 190. Antennal segments length, 30; 50; 52; 52; 45; 45; 52; 13.

♂ macropterous. Colour similar to female; pronotal anteromarginal setae sometimes reduced; fore tarsal tooth less acutely pointed than in female (Text-fig. 72); sternite VIII with large oval glandular area, 80μ long by 130μ wide.

Measurements (in microns) of one ♂ from near Alice Springs. Body length 2400. Head, length 240; maximum width 170; postocular seta 30. Pronotal shield, length 170; median width 270. Tergite IX, B_1 67; B_2 65; B_3 110.

MATERIAL STUDIED. Holotype ♀. SOUTH AUSTRALIA: North Flinders Range, Owieandana, [40 miles east of Leigh Creek], xi.1924 (*Hale & Tindale*), in California Academy of Sciences (Moulton, No. 3171).

SOUTH AUSTRALIA: Mulga Park, 200 miles south west of Alice Springs, 11 ♀, 1 ♂ in gall on *Acacia aneura*, 25.x.1967 (*L. A. Mound* 291t). NORTHERN TERRITORIES: Ayers Rock, 27 ♀, 19 ♂ in galls on *A. aneura*, 24.x.1967 (*L. A. Mound* 289t); 43 miles west of Alice Springs, 52 ♀, 34 ♂ in galls on *A. aneura*, 21.x.1967 (*L. A. Mound* 277t). QUEENSLAND: 25 miles SSW of Eulo, 11 ♀, 6 ♂ in galls on *A. aneura*, 17.x.1968 (*J. A. L. Watson*), in BMNH.

***Oncothrips habrus* sp. n.**

(Text-fig. 42)

♀ macropterous. Colour brown, head and tube dark brown; fore tibiae and apex of fore femora light brown, fore tarsi yellow; antennal III yellow, IV–VI light brown; major setae and fore wings pale.

Head with no major setae, faintly reticulate particularly at base, cheeks weakly convex; maxillary stylets wide apart, retracted to position of postocular setae (Text-fig. 42). Pronotum transverse, epimeral setae 32μ long, apex assymetric 13μ wide; anteroangular and posteroangular setae expanded but only 10μ long, the basal pores well developed 4μ wide. Mesonotal lateral setae expanded 13μ long. Metanotum reticulate with three pairs of small acute median setae. Fore wing with 11 duplicated cilia; two pairs of sub-basal setae 10–13μ long. Pelta elongate triangular, 100μ long, 80μ wide at base; tergites III–VI with posterior wing retaining setae flattened, 7μ broad; tergite IX seta B_3 not clearly visible in unique holotype, probably not acute at apex.

Measurements (in microns) of holotype. Body length 2000. Head, length 240; median width 145. Pronotal shield, length 135; median width 210. Fore wing, length 700; distal width 80. Tergite IX, B1 35; B2 45; B3 80. Tube, length 145; terminal setae 210. Antennal segments length, 26; 40; 32; 32; 35; 38; 38; 10.

MATERIAL STUDIED. Holotype ♀. NEW SOUTH WALES: Trangie, in gall on *Acacia pendula*, 7.iii.1968 (*L. A. Mound* 556), in ANIC.

The unique female on which this species is here described was thought at first to be a gynaecoid specimen of one of the other *Oncothrips* species. However it differs from *rodwayi* in having short major setae on tergite nine, from *antennatus* in having reduced pronotal setae, from *tepperi* in the position of the maxillary stylets in the head, and from all three of these species in the greater length of the terminal setae relative to the tube. Moreover it is unlikely that the holotype is gynaecoid in view of the long and slender fore tarsal tooth.

Oncothrips rodwayi (Hardy) **comb. n.**

(Text-figs 73 & 77)

Kladothrips rodwayi Hardy, 1915 : 102–103.
Cryptothrips tithonus Girault, 1928 (42) : 3. **Syn. n.**
Kladothrips froggatti Bagnall, 1929*b* : 196. **Syn. n.**
Kladothrips rodwayi Hardy; Bagnall, 1929*b* : 194–195.

As Bagnall pointed out, the original description of this species is remarkably confusing. Hardy states 'antennae generally very pale yellow, sometimes black'. This statement may be due to the fact that the three syntypes mounted on a slide by Hardy and now deposited in the Australian Museum, Sydney were strongly bleached with caustic potash. There are four normal syntypes in Dr H. Priesner's collection in Linz, Austria. Girault's statement that the head of *tithonus* is longer than that of *rodwayi* may be due to the fact that the Hardy syntypes are crushed, making the head appear relatively short and broad. The type-slide of *tithonus* bears three females and one of these has the postocular seta on one side elongate. The seta on the other side of the head, and the postocular setae of the other specimens are all short. Bagnall's (1929 : 197) record of *intermedius* (=*tepperi*) from Gippsland with *Koptothrips flavicornis* is a misidentification of *rodwayi*.

This species causes galls on the phyllodes of *Acacia melanoxylon*, and it probably has the same geographical range as this tree, i.e. Tasmania and the South Eastern Highlands and coastal regions from Adelaide to the New South Wales/Queensland border. The galls are purse-shaped, like a large cockroach ootheca, about 1 cm long and 75 mm deep. In an attempt to establish at what time of the year these galls are produced Mrs H. V. Andrewartha collected at monthly intervals from February until June 1968 on a tree near Adelaide. However the author could not find any differences in the contents of these galls from samples collected in October and November 1967. On each collecting date galls were found containing males, females and larvae.

No oedymerous or short winged forms have been found of *rodwayi*, although one dwarf male was collected near Adelaide. This dwarf male has seta B3 on tergite nine expanded at the apex instead of acute as is normal in this genus. The postocular setae are variable in their development in each of the series studied. Usually the postocular setae are no longer than the other head setae, but a few specimens have one or both postoculars well developed and expanded, 10–13μ long. The pelta, with its sinuous lateral margins (Text-fig. 73) is quite distinctive in this species.

Measurements (in microns) of one ♀ from near Adelaide. Body length 2650. Head, length 290; median width 175. Pronotal shield, length 195; median width 290; anteroangular seta 26; midlateral seta 20; posteroangular seta 23; epimeral seta 32 with assymetric apex 6μ wide. Mesonotal midlateral seta 20. Fore wing, length 1000; distal width 100; sub-basal setae 25–30; 14 duplicated cilia. Tergite IX, B_1 65; B_2 63; B_3 115. Tube, length 240; terminal setae 210. Antennal segments length 40; 50; 55; 52; 55; 55; 55; 23.

Measurements (in microns) of one ♂ from near Adelaide. Body length 2400. Head, length 260; median width 165. Pronotal shield, length 160; median width 245; epimeral seta 32. Fore wing, length 950; distal width 95; 10 duplicated cilia. Diameter of sternal gland on VIII 50. Tergite IX, B_1 65; B_2 65; B_3 85. Tube, length 190; terminal setae 175.

MATERIAL STUDIED. Syntypes. TASMANIA: Hobart, in galls on *Acacia melanoxylon*, May 1915 (*Rodway*), 3 ♀ in Australian Museum, Sydney, 4 ♀ in H. Priesner Collection, Linz.

Syntypes of *tithonus*. NEW SOUTH WALES, Bulli Pass, 3 ♀, 1.iv.1918 (*G. H. Hardy*); 'paratypes' [sic] of *tithonus*, VICTORIA: Fern Tree Gulley, 2 ♀, iii.1918 (*G. H. Hardy*), in Australian Museum, Sydney.

Syntypes of *froggatti*. TASMANIA: 6 ♀, in galls on *Acacia* sp., 7.ix.1903 (*A. M. Lea*); TASMANIA, Devonport, 3 ♀, forming blister-galls on Blackwood (*Acacia melanoxylon*), 1.ix.1902 (*W. W. Froggatt*), in BMNH.

VICTORIA: Otway Forest, 1 ♀, in ANIC; Kalorama, Jeeves Gulley, 3 ♀ in galls on *A. melanoxylon;* 17.ii.1929 (*R. Kelly*); Gippsland, 1 ♀ on *Acacia* sp. (*C. French*); Black Spur, 10 miles north of Healesville, 8 ♀ beaten from *A. melanoxylon*, 15.xi.1967 (*L. A. Mound* 362), in BMNH. SOUTH AUSTRALIA: West Stirling, near Adelaide, numerous ♂♂, ♀♀ and larvae on various dates between x.1967 and vi.1968 in galls on *A. melanoxylon* (*H. V. Andrewartha & L. A. Mound*), in BMNH.

Oncothrips tepperi Karny **comb. rev.**

(Text-figs 74, 75, 78 & 79)

Oncothrips tepperi Karny, 1911 : 569–571.
Kladothrips tepperi (Karny) Bagnall, 1929*b* : 195–196.
Kladothrips intermedius Bagnall, 1929*b* : 196–197. **Syn. n.**
Brithothrips fuscus Moulton, 1942 : 8–10. **Syn. n.**
Brithothrips fuscus (Moulton); Mound, 1970*b* : 159–172.

The single female from Gippsland, Victoria collected with *Koptothrips flavicornis* and referred to by Bagnall as *intermedius* is here regarded as a specimen of *rodwayi*. The types of *intermedius* are fully expanded, macerated and crushed, whereas the two syntypes of *tepperi* in Bagnall's collection are not only rather small, they are both strongly telescoped. This difference in the preparation of the specimens accounts for most of the differences between the nominal species. The data on the slides of *intermedius* may not be correct. It is possible that the specimens were collected at some distance inland, where the host plant *Acacia oswaldi* lives, and merely posted to Bagnall from Melbourne. This type of error is not uncommon with some of the early records from Australia.

The nominal species *Brithothrips fuscus* was based on four females and one 'male', although the latter specimen has recently been shown to be a female (Mound, 1970*b*). The fore tarsal teeth are broken off in the holotype and the three paratypes labelled as females. The author has recently suggested that this damage happened when the specimens were being put on to slides, but several further specimens have now been studied which were taken in the field by the author with broken fore tarsal teeth. The holotype of *fuscus* is an oedymerous, dealate (probably hemimacropterous) female, and the 'allotype' is a normally developed female.

The pattern of variation in this species is extremely confusing and an account of the variants found within a single gall has recently been given under the name *fuscus* (Mound, 1970*b*). Most specimens that have been studied are fully macropterous, but populations have been found in which individuals vary from micropterous to fully macropterous. This continuous variation in wing length is unusual in Thysanoptera, most species occurring as invariable morphs, e.g. micropterae or hemimacropterae. In *O. tepperi* the degree of wing development is correlated with allometric growth of other parts of the body. The micropterous specimens are always oedymerous with greatly enlarged pronotum and fore legs, and foreshortened antennae and head. Males are rather smaller than females with a less well developed fore tarsal tooth, but both sexes can show varying degrees of wing reduction and oedymerism, and also varying degrees of body size. Two small micropterous females collected by the author near Gilgandra, N. S. W. are particularly interesting as they both have seta B3 on tergite nine expanded at the apex instead of acute. The body length of these specimens is about 1900μ, and the apex of this seta may possibly be correlated with very small body size. The same character is noted above on a dwarf male of *rodwayi*. Small individuals of *tepperi* have the pronotal major setae very much smaller than large individuals.

O. tepperi has been collected by the author at several localities on *Acacia oswaldi*. The galls on this plant are very similar to the galls produced by *rodwayi* on *A. melanoxylon*. These two species of *Oncothrips* are closely related and it seems likely that the two host-plants are also related to each other. However *tepperi* is unusual in the Australian gall forming thrips in being polyphagous, a habit which is possibly related to its morphological variability. An insect species in which the physiology is sufficiently labile to allow a range of morphological variants to coexist is also likely to have a physiology able to accept more than one host plant. *O. tepperi* was originally described from *A. sclerophylla*, and the author has collected specimens from a gall on an herbarium specimen of *A. homalophylla* in the CSIRO Herbarium at Canberra. Two related species of Cosmopterygid moths (det. I. Common) were bred from galls of *tepperi* on *oswaldi* from Loxton S.A. and Peak Hill, N. S. W., but there was no indication as to how the caterpillars originally entered the galls.

Measurements (in microns) of one macropterous ♀ with one micropterous ♀ in parentheses. Body length 2500 (2300). Head, length 320 (260); median width 155 (152). Pronotal shield, length 260 (260); median width 275 (290); epimeral seta 50. Fore wing, length 950 (250); distal width 100; 14 duplicated cilia. Pelta, length 130 (110). Tergite IX, B_1 45 (45); B_2 58 (58); B_3 100 (90). Tube, length 195 (145); terminal setae 195 (115). Antennal segments length, 32 (40); 55 (42); 50 (32); 50 (30); 52 (30); 55 (40); 50 (25); 10 (10).

Measurements (in microns) of one macropterous ♂. Body length 2300. Head, length 275; median width 145. Pronotal shield, length 175; median width 240; epimeral seta 35. Fore wing, length 800; distal width 70. Tergite IX, B_1 50; B_2 70; B_3 70. Tube, length 130; terminal setae 160. Antennal segments length, 32; 50; 42; 45; 45; 50; 42; 10.

MATERIAL STUDIED. Syntypes 2 ♀ [SOUTH AUSTRALIA: Petersburg (? Peterborough), in galls on *Acacia sclerophylla* (*A. G. Edquist*)], in BMNH.

Lectotype ♀ of *intermedius* with 1 ♀, 1 ♂. VICTORIA: Melbourne, on *Acacia* (*E. T. Carter*), in BMNH, but see above for comment on this data.

Holotype ♀ of *fuscus*. SOUTH AUSTRALIA: Pimba, in *Acacia* galls, iv.1929 (*R. J. Greenfield*), in California Academy of Sciences (Moulton No. 3526).

'Allotype ♂' of *fuscus* (actually a ♀). NEW SOUTH WALES: on *Acacia oswaldi*, 2.vi.1928 (*W. W. Froggatt*), in California Academy of Sciences (Moulton No. 2951).

SOUTH AUSTRALIA: Loxton Agricultural Research Station, in galls on *Acacia oswaldi*; 3 ♂, 16 ♀ (5 short winged), 30.xi.1967 (*L. A. Mound* 393); 28 ♀ (6 short winged), 7.iii.1968 (*R. Brewer*), in BMNH. NEW SOUTH WALES: Peak Hill, 21 ♀ (4 short winged), 10 ♂ (1 short winged), in galls on *A. oswaldi*, 8.iii.1968 (*L. A. Mound* 564); Collie 8 ♀, 3 ♂, (all micropterous), in galls on *A. homalophylla* in CSIRO Herbarium 14.ix.1950; 23 miles south of Gilgandra, 2 ♀, 1 ♂ (all micropterous), in galls on *A. pendula* or *oswaldi*, 6.vi.1968 (*L. A. Mound* 675), in BMNH; Leeton, 58 ♀, 4 ♂ in blister galls on *A. oswaldi*, 1.vi.1928 (*K. McKeawan*); Ungarie, 12 ♀ in Milgee or Rosewood galls, 5.ix.1926, in ANIC. QUEENSLAND: Pentland, 2 ♀ on *A. oswaldi*, 19.x.1935; 16 miles south of Eulo, 2 ♀ on *A. oswaldi*, 23.x.1948, in ANIC.

ONYCHOTHRIPS Karny

Onychothrips Karny, 1911 : 565. Type-species: *Phloeothrips* [sic] *tepperi* Uzel, by monotypy.

Large black, macropterous Phlaeothripinae causing phyllode galls on *Acacia aneura*. Head longer than wide, rounded in front, overhanging bases of antennae; cheeks parallel, postocular setae small; maxillary stylets close together in middle of head, retracted to postocular setae; mouth cone short and rounded. Antennae eight-segmented, III with one sense cone, IV with two sense cones. Pronotal shield as wide as long, or wider than long; anteromarginal setae not developed, remaining major setae pale with expanded apices; epimeral sutures complete; praepectus absent, mesopraesternum reduced to two lateral triangular plates. Fore femora moderately enlarged; fore tibiae with a large or small apical tubercle, this is reduced in males; fore tarsus with a stout tooth, this is smaller in ♂ than in ♀. Mesonotal lateral setae expanded; metanotum reticulate with one pair of median setae; fore wings broad, two pairs of sub-basal setae. Pelta wider than long; tergites II–VII with two pairs of sigmoid wing-retaining setae; posteroangular tergal seta well developed; tergite IX B_1 and B_2 equal in length in both sexes. with apices expanded; tube rather long, narrowing to apex, terminal setae shorter than tube, Sternites with transverse row of short accessory setae; sternite VIII of male usually with no glandular area, although the chitin is porous medially in some larger specimens.

The two species included in this genus have a very similar head and pronotum but differ considerably in the lengths of their tubes. Both species have strong similarities to *Kladothrips augonsaxxos*, and as is pointed out above, the host-plants of these three species are placed in the Section Juliflorae of the genus *Acacia*. The pronotum and fore femora of *Kladothrips* species are longer and the tube is shorter than in *Onychothrips* species. The pelta is elongate triangular in *Kladothrips* species whereas it is broadly triangular in *Onychothrips*. However the head, and fore tibiae and tarsi of *tepperi* are very similar to *augonsaxxos* and the two genera are very closely related. *Oncothrips* species have similar, although shorter, antennae with two sense cones on the fourth segment, but these species have a strongly transverse pronotum and no tubercles on the apex of the fore tibiae. The larger species of *Koptothrips* are also similar to *Onychothrips* but have three sense cones on the fourth antennal segment and a characteristic broad shiny pronotal shield.

KEY TO THE SPECIES OF *ONYCHOTHRIPS*

1 Tube longer than head; fore tibia short and stout, particularly in ♀, with small apical tubercle (Text-fig. 80); metanotal median setae with expanded apices; pronotal shield of ♀ as long as wide . . . . ***tepperi*** (p. 449)

– Tube shorter than head; fore tibia slender with large flat plough-shaped tubercle at apex, but this is reduced in large males (Text-figs 82 & 83); metanotal median setae acute; pronotal shield wider than long in both sexes . . . ***arotrum*** (p. 447)

***Onychothrips arotrum* sp. n.**

(Text-figs 82 & 83)

♀ macropterous. Dark brown to black, fore tibiae and tarsi yellow with brown markings; antennae light brown, III and apex of II yellowish; fore wing pale, cilia dark; major setae pale, terminal setae of the tube dark.

With the morphological characters given above in the generic definition and key to species. Postocular setae expanded, 30μ long, but frequently not distinguishable from remaining head setae. Fore tarsal tooth very large in large individuals, but fore tibial tubercle relatively larger in small individuals. Setae much longer and pelta more elongate in large than in small individuals.

Measurements (in microns) of a large ♀ from Coober Pedy with a small ♀ from Ayers Rock in parentheses. (Table I indicates the range within one gall). Body length 3500 (2500). Head, length 320 (260); median width 210 (165). Pronotal shield, length 350 (225); median width 390 (300); epimeral seta 105 (60). Mesonotal midlateral seta 52 (26). Fore wing, length 1250 (1000); number of duplicated cilia 26 (15). Tergite IX, B1 145 (84); B2 165 (80); B3 165 (110). Tube, length 290 (210); terminal setae 190 (130). Antennal segments length, 32 (30); 65 (50); 77 (55); 70 (55); 70 (52); 55 (50); 55 (50); 18 (15).

TABLE I

Three ♀♀ of *O. arotrum* from one gall, Bon Bon, South Australia
Lengths in microns

Head	Pronotum	Epimeral seta	Antennal III	Tube
300	335	100	74	290
290	285	80	68	260
280	225	70	60	225

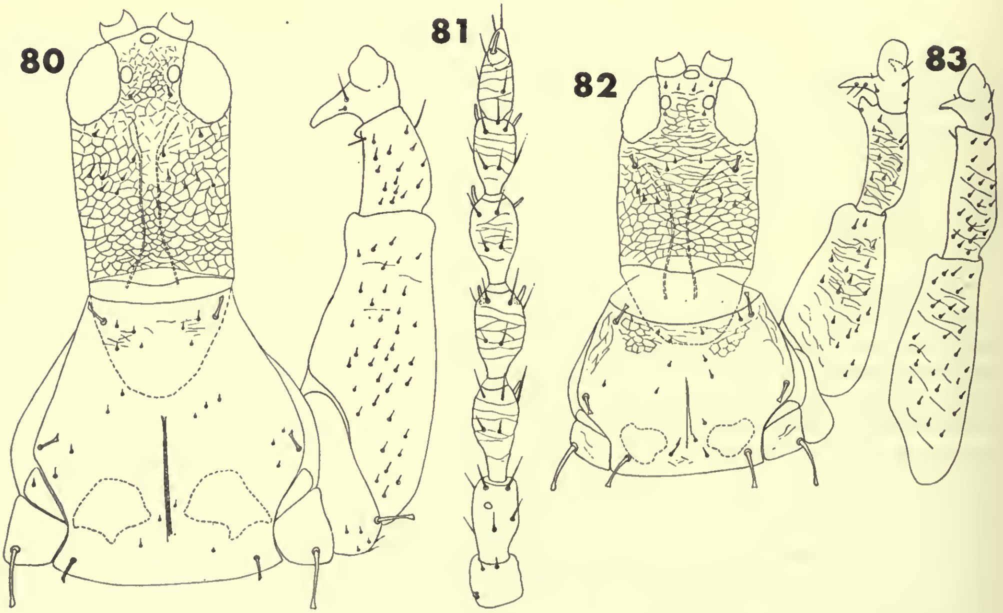
♂ macropterous. Colour and structure similar to female. Large individuals have an irregular circular glandular area on sternite VIII, but this does not have a definite margin and is only faintly indicated in small males by porous chitin within the normal reticulation.

Measurements (in microns) of a large ♂ with a small ♂ in parentheses. Body length 2600 (2100). Head, length 275 (240); median width 195 (175). Pronotal shield, length 275 (175); median width 320 (275); epimeral seta 80. Tergite IX, B_1 145 (90); B_2 145 (95); B_3 145 (?). Tube, length 225 (175).

MATERIAL STUDIED. Holotype ♀. SOUTH AUSTRALIA: Bon Bon Homestead, 50 miles north of Lake Gairdner, in gall on *Acacia aneura* var. *latifolia*, 27.x.1967 (*L. A. Mound* 305s2), in ANIC.

Allotype ♂ and 10 ♀, 5 ♂ paratypes collected in same gall as holotype, also 1 ♀ in a second gall on the same tree, in BMNH.

SOUTH AUSTRALIA: Mulga Park, 200 miles SW of Alice Springs, 2 ♀ in gall on *A. aneura*, 25.x.1967 (*L. A. Mound* 291); 10 miles south of Welbourne Hill, 48 ♀, 7 ♂ in gall on *A. aneura* in dry creek bed, 26.x.1967 (*L. A. Mound* 302), in BMNH; NW of Coober Pedy, 11 ♀ in globular galls on *A. aneura*, 19.v.1966, in BMNH and Waite Institute. NORTHERN TERRITORIES: 40–50 miles west of Alice Springs, 25 ♀, 7 ♂ in galls on *A. aneura*, 21 & 22.x.1967 (*L. A. Mound* 277 & 286); Ayers Rock, 32 ♀, 9 ♂ in galls on *A. aneura*, 24.x.1967 (*L. A. Mound* 290), in BMNH; Alice Springs, 5 ♀ in galls on Mulga, 23.vi.1967 (*C. E. Chadwick*), in ANIC. QUEENSLAND: 25 miles SSW of Eulo, 4 ♀ in galls on *A. aneura*, 17.x.1968 (*J. A. L. Watson*), in BMNH. NEW SOUTH WALES: Broken Hill, 6 ♀ in galls on Mulga, x.1929, in ANIC.



FIGS 80–83. *Onychothrips* species. 80–81. *tepperi*: 80, head, pronotum and fore leg of female. 81, antenna. 82–83. *arotrum*: 82, head, pronotum and fore leg of female. 83, fore leg of male.

The size variation in this species is very great, and the relative lengths of some setae do not remain constant throughout this size range. In large specimens the setae on tergite nine are about half as long as the tube, whereas in small specimens these setae are barely one-third as long as the tube. Similarly the head is shorter than the pronotum in large specimens but much longer than the pronotum in small ones. The variation of the fore tibial tubercles is particularly interesting as it is apparently weakly negatively heterogonic. The smallest females have a larger tubercle on the tibia than the largest females. The holotype has been chosen from a series of rather large individuals.

O. arotrum produces apparently identical galls to *tepperi* Uzel, and the two species have been collected at at least one site on the same tree. These galls are spherical with an external diameter of about 15 mm. The walls of a gall are sometimes about 2 mm thick, and they become very hard as they mature. One gall with an internal diameter of about 10 mm contained 750 adults and at least 500 immature stages. In most of the galls studied the males formed about 10% of the adult population, whereas in *tepperi* Uzel the sexes were commonly found in equal numbers. On several occasions females of *arotrum* were found with the abdominal intersegmental membranes distended, but never as much as in *Kladothrips* species. The second instar larvae of *arotrum* have long slender and acute prothoracic setae, whereas in *tepperi* these setae are shorter with a clearly rounded apex.

Onychothrips tepperi (Uzel)

(Text-figs 80 & 81)

Phloeothrips [sic] *Tepperi* Uzel, 1905 : 99–102.
Onychothrips tepperi (Uzel) Karny, 1911 : 565–567.
Onychothrips hakeae Bagnall, 1929*b* : 198–199. **Syn. n.**
Onychothrips hakeae Bagnall; Mound, 1968 : 142.

The lengths of the head, pronotum and abdominal setae of the type-series of *hakeae* fall within the range of variation of *tepperi* collected in galls on *Acacia aneura*. The original labels of the *hakeae* series, which were written by W. W. Froggatt, state 'Thrips from galls on *Hakea* or *Grevillea* foliage'. Moreover in Froggatt's collection there are several specimens of *tepperi* bearing the data 'N.S.W. Cobar, *Hakea* galls, 1910 (*Solomon*)'. These records of *Hakea* or *Grevillea* as a host plant for this insect require further substantiation because Australian xerophytic plants are difficult to identify in the absence of flowers or fruit. *Hakea* and *Grevillea* have a great range of leaf form, and several species look quite similar to *Acacia* species. Unfortunately thrips tend to attack the less healthy plants, and as a result it can be difficult to find a tree which bears both galls and flowers and fruit.

The galls of *tepperi* cannot be distinguished from those of *arotrum*, and the two species have been collected from the same tree. The author's host records for this species are all given as *A. aneura*, but it is possible that one or other of the *Onychothrips* species occurs on *Acacia brachystachia* as well. These two species of *Acacia* are not easy to separate. Notes on the sex ratio of *tepperi* and the recognition of the larvae are given above under *arotrum*.

♀ macropterous. Colour black, fore tibiae and tarsi yellow-brown; antennals II & III yellow, IV light brown, V & VI pale basally; wings pale with dark cilia; major setae pale. With the characters given in the generic definition and key to species above; surprisingly little variation in body size and proportions has been observed.

Measurements (in microns) of one ♀. Body length 3200. Head, length 300; median width 175. Pronotal shield, length 330; median width 315; epimeral setae 65; anteroangular setae 40. Mesonotal midlateral setae 50. Fore wing length 1300; number of duplicated cilia 20. Tergite IX, B1 90; B2 100; B3 130. Tube, length 365; terminal setae 190. Antennal segments lengths, 32; 58; 64; 64; 58; 55; 55; 16.

♂ macropterous. Colour and structure similar to female but fore tibia more slender and tarsal tooth smaller; sternite VIII without a glandular area.

Measurements (in microns) of one ♂. Body length 2800. Head, length 260; median width 175. Pronotal shield, length 260; median width 310; epimeral setae 65. Tergite IX, B1 130; B2 135; B3 135. Tube length 320.

MATERIAL STUDIED. Syntype ♀. SOUTH AUSTRALIA: in galls on *Acacia aneura*, ex collection of H. Uzel, in BMNH.

Lectotype ♀ of *hakeae* with 6 ♀, 2 ♂, NEW SOUTH WALES: Broken Hill, from galls on *Hakea* (*O. Lower*), in BMNH (see above for comment on this data). There are specimens with similar data in ANIC and NSW Department of Agriculture.

SOUTH AUSTRALIA: Mulga Park, 200 miles SW of Alice Springs, 1 ♀ in gall on *A. aneura*, 25.x.1967 (*L. A. Mound* 291); 10 miles south of Welbourne Hill, 2 ♀ in gall on *A. aneura*, 26.x.1967 (*L. A. Mound* 302); Mable Creek, 30 miles west of Coober Pedy, 10 ♀, 5 ♂ in gall on *A. aneura*, 26.x.1967 (*L. A. Mound* 306), in BMNH; Mt. Willoughby, 16 ♀, 4 ♂ in Mulga leaf gall (*N. Ford*), in ANIC. NORTHERN TERRITORIES: 40–50 miles west of Alice Springs, 32 ♀, 27 ♂ in galls on *A. aneura*, 22.x.1967 (*L. A. Mound* 286); Ayers Rock, 3 ♀ in galls on *A. aneura*, 24.x.1967 (*L. A. Mound* 289), in BMNH. NEW SOUTH WALES: Broken Hill, 24 ♀, 8 ♂ in *Acacia* galls, 26.iii.1928 (*Shepherd*); Pera Bore, 4 ♀ on *A. aneura*, 28.viii.1906 (*W. W. Froggatt*); Cobar, 3 ♀, 3 ♂ in *Hakea* galls, 1910 (*Solomon*) in ANIC. QUEENSLAND: 25 miles SSW of Eulo, 8 ♀ in galls on *A. aneura*, 17.x.1968 (*J. A. L. Watson*), in BMNH.

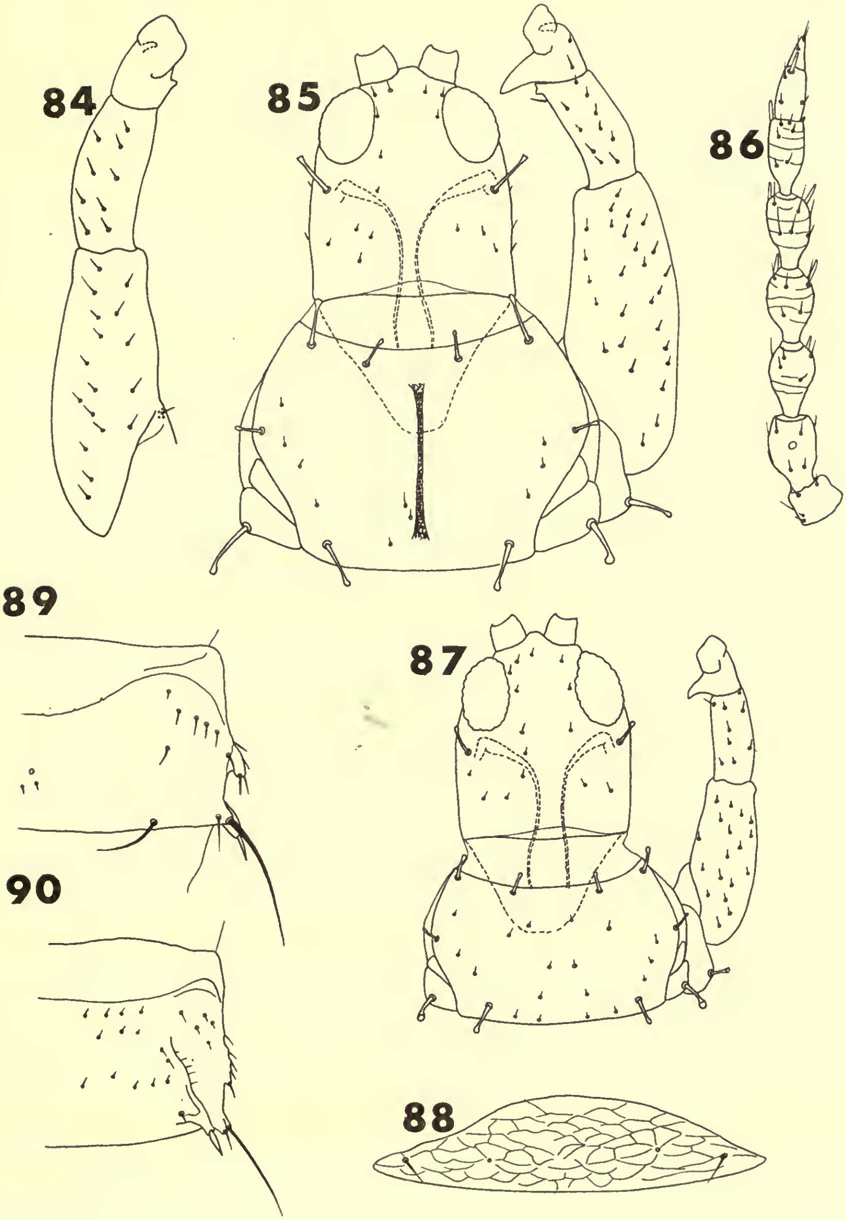
***RHOPALOTHRIPOIDES* Bagnall**

Rhopalothripoides Bagnall, 1929*a* : 174. Type-species: *Rhopalothrips brunneus*, by original designation, here regarded as a synonym of *froggatti*.

Froggattothrips Bagnall, 1929*a* : 175. Type-species: *F. acaciae*, by original designation.

Rhopalothripoides Bagnall; Mound, 1968 : 148–149.

Froggattothrips was based on four individuals with a remarkably short broad outline. It is now realized that this shape is the result of telescoping of the body segments due to starvation prior to death. The genus has recently been redefined and at present includes only a single species. This is probably not related to the two American genera found on *Cactus* species, *Rhopalothrips* and *Scopaeothrips*. These two genera both have highly specialized cuticular sculpture and they are probably more closely related to the *Idiothrips* group, of which there are several species in Australia living at ground level. The New Caledonian species *Scopaeothrips intermedius* Bianchi has not been studied but it may be congeneric with *froggatti*. *Rhopalothripoides* is here regarded as an offshoot of the Australian *Kladothrips* group, but its relationships will be more easily studied if macropterous individuals can be found.



FIGS 84–90. 84–88. *Rhopalothripoides froggatti*: 84, fore leg of female. 85, large male. 86, antenna. 87, small male. 88, pelta. 89. *Lichanothrips pulchra*, tergite IV of female. 90. *Lichanothrips magnificus*, sternite V of female.

Rhopalothripoides froggatti (Bagnall)

(Text-figs 84–88)

Rhopalothrips froggatti Bagnall, 1916 : 411–412.
Rhopalothrips brunneus Bagnall, 1916 : 412. **Syn. n.**
Rhopalothripoides froggatti (Bagnall) Bagnall, 1929*a* : 174.
Rhopalothripoides kellyanus Bagnall, 1929*a* : 174–175. **Syn. n.**
Froggattothrips acaciae Bagnall, 1929*a* : 175–176. **Syn. n.**
Froggattothrips inconsequens Bagnall, 1929*a* : 176. **Syn. n.**
Rhopalothripoides brunneus (Bagnall); Mound, 1968 : 149.

The above synonymy is the result partly of the imperfect mounts on which the nominal species were based, and partly of the great range of size found in this species. The males are particularly variable, the holotype of *froggatti* being a very small gynaecoid male. In the gynaecoids the pronotum is short, but in oedymerous specimens it is as long as or longer than the head.

All the specimens which have been studied lack ocelli and wing-retaining setae, and have the pterothorax and pelta short and broad as is typical of apterous individuals. However, a short wing membrane is developed, about 50μ long, which bears one or more broadly expanded setae. Axillary sclerites cannot be distinguished, however. In most micropterous thrips it is usual for axillary sclerites and ocelli to develop before wing rudiments appear. It is remarkable that this species whose skeletal structure is so typically 'apterous' should possess a rudimentary wing membrane.

This species was originally collected in the leaf-glands of *Acacia dealbata* and *A. decurrens.* The present author has found it in abundance inside the leaf-glands of *A. parramattensis.* These glands, or domatia, are pits of doubtful function which occur on the adaxial surface of the rhachis of *Acacia* leaves between the bases of each pair of pinnae. The external aperture of one of these pits is usually about one millimetre in diameter, but the cavity is ovoid and may be three millimetres long and two millimetres across. Up to twenty eggs of *froggatti* have been seen inside one gland, and although usually only a single female, or a male and a female, were found inside each cavity, on one occasion the author observed three adults and one larva.

Measurements (in microns) of one small and one large male collected together at Laurieton, New South Wales. Body length 1100–1400. Head, length 145–175; maximum width 120–145; postocular seta 30–50. Pronotal shield, length 95–160; median width 175–235. Pelta, length 32–42; width 140–170. Glandular area on sternite VIII diameter 16. Tergite IX, B1 32–35; B2 32–35; B3 65–80. Tube length 75–100. Antennal segments III–VIII length, 32–42; 32–42; 32–42; 32–42; 26–32; 16–20.

MATERIAL STUDIED. Holotype ♂. NEW SOUTH WALES: Upper Mangrove, in leaf-glands of *Acacia decurrens*, 7.ix.1900 (*W. W. Froggatt*), in BMNH.

Holotype ♀ of *brunneus*. VICTORIA: *Acacia dealbata* (*R. Kelly*), in BMNH.

Holotype ♀ of *kellyanus*. VICTORIA: *Acacia dealbata*, collected with *brunneus* holotype (*R. Kelly*), in BMNH.

Holotype ♀ of *acaciae*. NEW SOUTH WALES: Termeil, *Acacia* sp., 27.ix.1899 (*W. W. Froggatt*), in BMNH.

Holotype ♀ of *inconsequens*. NEW SOUTH WALES: Termeil, *Acacia* sp., (with *acaciae* ♀ & 2 ♂), 27.ix.1899 (*W. W. Froggatt*), in BMNH.

QUEENSLAND: Brisbane, Mt. Coot-tha, 1 ♂ on *Acacia* sp. leaves, 22.iii.1968 (*L. A. Mound* 591). VICTORIA: Melbourne, Park Orchard, 11 ♀, 8 ♂ on *Acacia dealbata*, 7.ix.1934 (*H. G. Andrewartha*); Blackburn Lake Reservoir, 9 ♀, 1 ♂ on *Acacia mearnsii*, 17.xi.1967 (*L. A. Mound* 373). AUSTRALIAN CAPITAL TERRITORY: Canberra, O'Connor Quarry, 12 ♀, 10 ♂ in leaf glands of *Acacia parramattensis*, 19.v.1968 (*L. A. Mound* 658), in BMNH. NEW SOUTH WALES: Cooma, 3 ♀, 6 ♂, in *Acacia* galls, 7.iii.1961 (*E. M. Reed*); Laurieton, 8 ♀, 14 ♂, on *Acacia* sp., 26.x.1960 (*E. M. Reed*), in ANIC.

WARITHRIPS gen. n.

Type-species: *Warithrips maelzeri* sp. n.

Black macropterous species of Phlaeothripinae. Eyes large; cheeks with a small tooth behind eyes, with 2–5 pairs of cheek setae; mouth cone short and rounded; antennae eight segmented, one sense cone on III, three sense cones on IV. Pronotal anteromarginal setae weak; praepectus well developed, probasisternum large, mesopraesternum reduced to two lateral triangles. Fore femur of female with a row of tubercles on inner margin, femora of male simple; fore tibia with an apical tubercle in both sexes; fore tarsal tooth large in ♀ but small in ♂. Fore wings broad, cilia closely set, no duplicated cilia; only two major sub-basal setae. Metanotum and pelta reticulate; mesonotal lateral setae acute. Tergites II–VII with two pairs of wing-retaining setae; tergite IX with setae shorter than tube; tube shorter than head, terminal setae long and dark. Sternites with a transverse row of accessory setae; sternite VIII of ♂ with transverse glandular area which extends on to lateral quarters of tergite VIII.

This new genus has some of the characteristics of *Dunatothrips* but can be distinguished by the presence of postocular setae and cheek setae, the normally developed tube, and the presence of a row of tubercles instead of a single tubercle on the fore femur. It is most closely related to *Csirothrips* described above, in which the fore femora are massive but without tubercles. The absence of duplicated cilia from the broad fore wings and the presence of praepectal plates constitute an unusual combination of characters which is discussed above under *Csirothrips*. The extension on to the tergite of the sternal glandular area of the male is apparently unique to this genus. The three species included in this genus probably all live in between *Acacia* phyllodes tied together by caterpillars. The generic name is derived from the initial letters of the Waite Agricultural Research Institute in recognition of the valuable assistance they provided for this study.

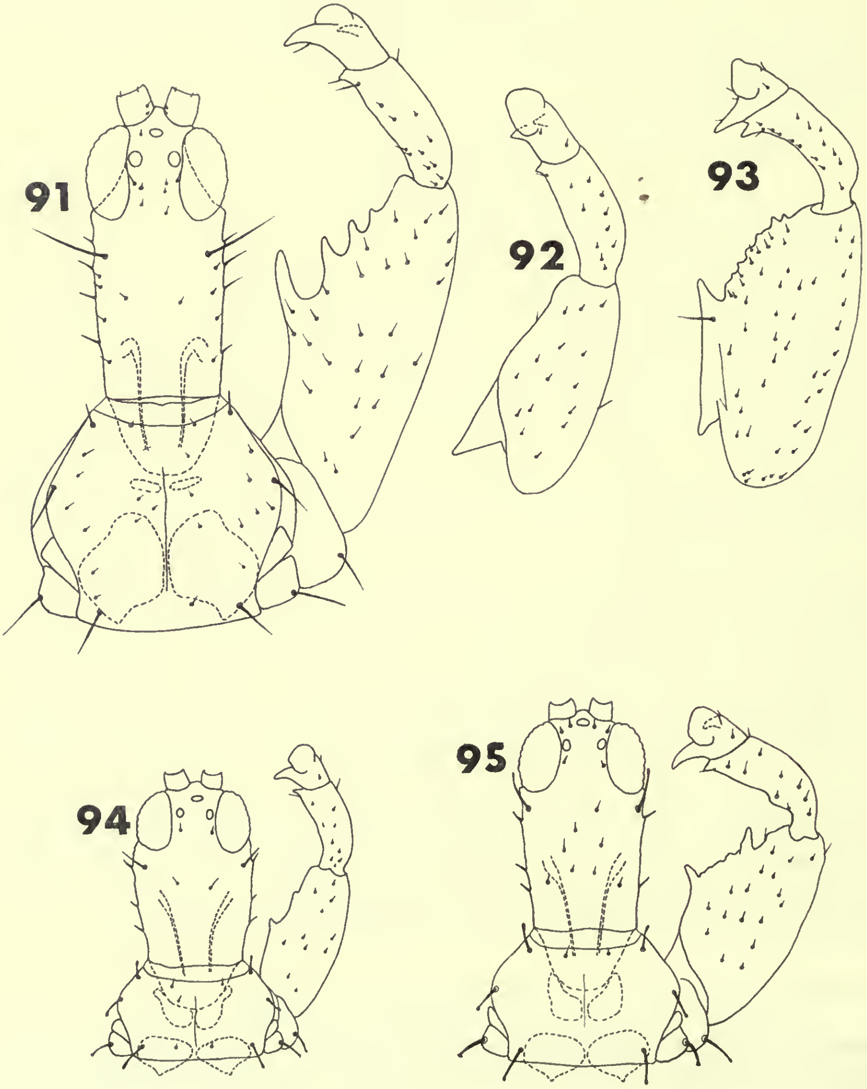
KEY TO THE SPECIES OF *WARITHRIPS*

1 Postocular seta barely reaching hind margin of eye; maxillary stylets close together in middle of head; pronotal midlateral setae absent; fore femur of ♀ with one large median tubercle and a distal row of smaller tubercles (Text-fig. 93); tergite IX of ♀ with B3 short and thorn-like . . . . **_distinctus_** (p. 456)

– Postocular seta much longer than the distance of its base from hind margin of eye; maxillary stylets not close together (Text-fig. 91); pronotal midlateral setae present 2

2 Fore femur of ♀ elongate, median tubercle curved, distal tubercles decreasing in size (Text-fig. 91); fore wing with sub-basal setae B_2 and B_3 normally developed; major setae on tergite IX softly rounded at apex . . . . . ***acaciae*** (p. 455)

– Fore femur of ♀ stout, with two major tubercles connected by a row of small tubercles (Text-figs 94 & 95); fore wing with an additional sub-basal seta distal and posterior to B_3; major setae on tergite IX expanded at apex . . . . ***maelzeri*** (p. 456)



FIGS 91–95. *Warithrips* species. 91, *acaciae*, head, pronotum and fore leg of large female. 92, *acaciae*, fore leg of male. 93, *distinctus*, fore leg. 94, *maelzeri*, head, pronotum and fore leg of small female. 95, *maelzeri*, large female (praepectus and probasisternum dotted).

Warithrips acaciae (Moulton) comb. n.

(Text-figs 91 & 92)

Thaumatothrips acaciae Moulton, 1968 : 106–107.

The genus *Thaumatothrips* is at present restricted to the type-species *froggatti* Karny. Although *froggatti* has similar fore femora and a similar antennal sense cone formula to the species of *Warithrips*, it can be distinguished by the presence not only of fore wing duplicated cilia and all five pairs of pronotal major setae, but also by the absence of the praepectus. As Moulton has stated, *acaciae* looks rather like a species of *Euoplothrips*, a genus of leaf-rolling thrips on mesophytic trees in the Pacific area. But species of that genus are readily distinguished because their fore wings have a distinct median constriction, and there are three sense cones on the third antennal segment.

Moulton described *acaciae* from three females which were sent to him dry on cards by W. W. Froggatt. The rest of Froggatt's original series, consisting of nine females and one male, has been compared with Moulton's holotype. The male is here described and accepted as the allotype. According to Froggatt's labels, which are not easy to read, the collector was G. Withers, not Froggatt himself, and the specimens were collected in December 1926 associated with the galls of *Kladothrips augonsaxxos*. The species is probably not a primary gall-former. The figures given below indicate that the growth pattern of the head is allometric. The head is relatively much more slender in large than in small females, although the ratio between the head and tube lengths is constant.

♀ macropterous. Contrary to the original description, antennal IV has three sense cones, pronotal anteroangular setae are short, epimeral setae are not acute at apex.

Measurements (in microns) of small and large specimens. Body length 2350 (3000). Head, length 320 (420); width across eyes 190 (220); postocular seta 70 (120). Pronotal shield, length 200 (320); median width 280 (370); anteroangular seta 30; epimeral seta 50 (90). Fore wing, length 900 (1250); distal width 100. Tergite IX, B1 70 (100); B2 50 (65); B3 160 (200). Tube length 200 (260). Antennal segments length III–VIII, 61 (87); 58 (80); 58 (77), 65 (77); 55 (70); 23 (25).

♂ macropterous but dealate. Colour as in female, head short and pronotum broad as in small female; metanotum lightly reticulate, median setae short; pelta reticulate, rounded laterally; fore tarsal tooth small, fore femur without tubercles (Text-fig. 92); tergite IX with B2 short and stout as in female, with apices softly rounded; sternite VIII with transverse glandular area extending on to lateral quarters of tergite.

Measurements (in microns) of allotype. Body length 2300. Head, length 270; width across eyes 190; postocular seta 70. Pronotal shield, length 190; median width 320; epimeral seta 60. Tergite IX, B1 120; B2 80; B3 160. Antennal segments length III–VIII, 58; 55; 55; 58; 58; 23; sense cone on III 8.

MATERIAL STUDIED. Holotype ♀. NEW SOUTH WALES: Gilgandra, on *Acacia doratoxylon*, 1926 (*W. W. Froggatt*), in California Academy of Sciences (Moulton No. 1686), but see comments above on this data.

NEW SOUTH WALES: Gilgandra, 9 ♀, 1 ♂ in galls on *Acacia doratoxylon*, 29–30.xii. 1926 (*G. Withers*) in ANIC.

Warithrips distinctus (Moulton) **comb. n.**

(Text-fig 93)

Thaumatothrips distinctus Moulton, 1968: 104–106.

This species can be distinguished from *Thaumatothrips* by the presence of praepectal plates, and the absence of fore wing duplicated cilia and pronotal anteromarginal setae. The unique holotype is damaged and has probably been remounted from a dry card. The pronotal midlateral setae are apparently absent. The postocular setae are not as strongly expanded as the original figure indicates (40–47μ long, 3μ at apex), and the inner dorsal seta of the fore femur is acute at the apex. The cheek setae are weaker than in the other species of *Warithrips* except for the basal pair, and the species can be recognized by the armature of the fore femur and the large ventral seta (B_3) on tergite nine.

Measurements (in microns) of holotype. Body length 2500. Head, length 400; width across eyes 240. Tergite IX, B_1 110; B_2 135; B_3 50. Tube length 225.

MATERIAL STUDIED. Holotype ♀. SOUTH AUSTRALIA: Barton (*A. M. Lea*), in California Academy of Sciences (Moulton No. 3113).

Warithrips maelzeri **sp. n.**

(Text-figs 94–97)

♀ macropterous. Colour brown to dark brown, mid and hind tarsi yellow except at apex; fore tibiae brown or light brown; fore tarsi and basal half of antennals III–VII usually yellow-brown; fore wings clear, cilia dark; major setae pale, terminal setae of tube long and dark.

Head with cheeks narrowing to base from postocular tooth, gynaecoid specimens have rounded cheeks and no postocular tooth. Antennal VII very short, suture not strongly oblique (Text-fig. 96). Pronotal anteromarginal seta more than half as long as anteroangular in oedymerous specimens. Tubercles of fore femur and tibia reduced in gynaecoid specimens (Text-fig. 94). Tube rather stout, not strongly tapering but constricted just before apex.

Measurements (in microns) of holotype with small ♀ in parentheses. Body length 2650 (2100). Head, length 350 (290); width behind eyes 210 (195); postocular seta 80 (55). Pronotal shield, length 190 (130); median width 300 (260); epimeral seta 65 (35). Mesonotal midlateral seta 23 (16). Fore wing, length 1100 (900); distal width 110 (95); sub-basal setae 30–40. Tergite IX, B_1 145 (100); B_2 95 (80); B_3 195 (160). Tube, length 210 (175); terminal setae 310 (280). Antennal segments length, 30; 50; 65; 55; 55; 61; 68; 13.

♂ macropterous. Colour similar to female but antennae usually paler and fore tibiae darker. Head without postocular tooth, cheeks roundly narrowed to base. Fore femur without tubercles, fore tibial tubercle small. Glandular area on sternite VIII extends dorsally on to lateral quarters of tergite VIII.

Measurements (in microns) of allotype. Body length 2400. Head, length 290; median width 195; postocular seta 52. Pronotal shield, length 165; median width 300; epimeral setae 65. Fore wing, length 275; distal width 97. Tergite IX, B_1 130; B_2 80; B_3 175. Tube, length 170; terminal setae 290.

MATERIAL STUDIED. Holotype ♀. SOUTH AUSTRALIA: Mt. Lindsay, Birksgate Range, 27°01'S 129°55'E, on an *Acacia* tree, between two broad phyllodes tied together by a caterpillar, 6.viii.1962 (*D. A. Maelzer*), in ANIC.

Allotype ♂ with 20 ♀, 7 ♂ paratypes collected with the holotype, in ANIC, BMNH and Waite Institute.

This species was kindly forwarded to the author by Miss Helen Brookes of the Waite Agricultural Research Institute, Adelaide. The type-locality is in the north-west of South Australia, and the phyllodes of the host plant are reminiscent of *A. oswaldi.* Unlike gall-forming species, the larvae of *maelzeri* are brightly coloured with red hypodermal pigment.

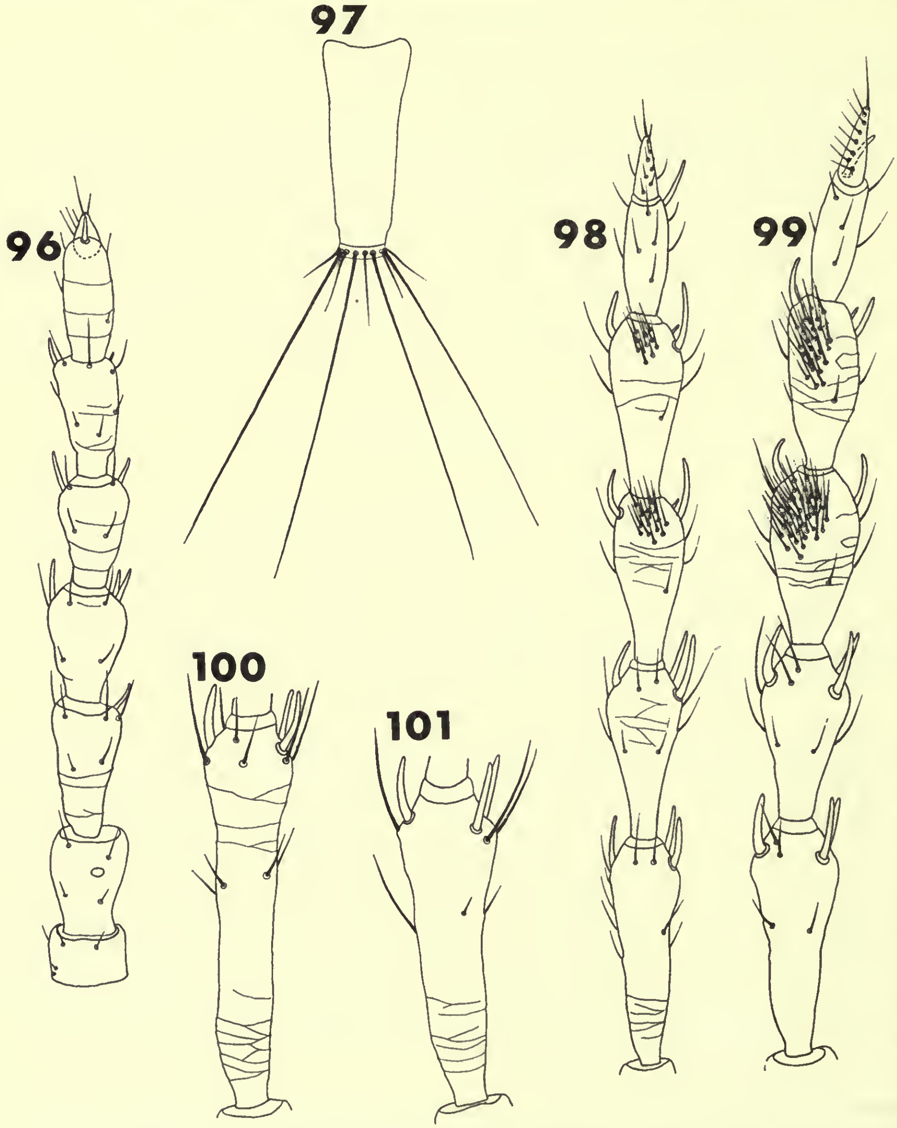
XANIOTHRIPS gen. n.

Type-species: *Xaniothrips xantes* sp. n.

Large, bicoloured, macropterous species of Phlaeothripinae. Head longer than wide, eyes bulging, cheeks narrowed to base with a stout seta near base; ocelli not directed forwards; postocular setae reaching hind margin of eye; maxillary stylets wide apart low in head, mouth cone short and rounded. Antennae eight-segmented, III and IV with three sense cones, V and VI with about 10–40 small sensory hairs ventrally; VIII less than half as long as VII, broadly joined to VII by transverse suture. Pronotal shield almost flat, epimeral sutures complete; posteroangular setae long, epimeral setae and midlaterals shorter, anteroangulars and anteromarginals frequently not developed; praepectus absent; probasisternum with transverse anterior margin; mesopraesternum broad and complete but sometimes eroded medially leaving only two lateral plates. Legs slender, fore tarsi without tooth in both sexes; hind tibiae with three stout apical spines, mid and hind femora with several stout setae on posterior margin. Mesonotal median furrow less than half as long as sclerite, midlateral setae developed. Metanotal median setae small. Fore wings very broad near duplicated cilia, apical cilia short; sub-basal setae small. Pelta wider at base than long; tergites II–V with two pairs of sigmoid wing-retaining setae, these are usually reduced on VI and VII; lateral margins of tergite II in ♀ with about six short stout setae; median tergites strongly transverse, with posterior border wider than anterior; posteroangular setae of tergite IV–VII exceptionally long, as long as median length of tergites; marginal setae of tergite IX stout at base; dorsal pair of terminal setae on tube much stouter than remaining terminal setae. Sternites II–VIII with at least six pairs of marginal setae, these form long combs in female but are less conspicuous in male; numerous accessory setae distributed across sternites; sternite VIII of male without glandular area; navicula of male genitalia with a long acute apex.

This genus is apparently unique in the Thysanoptera in the form of the terminal setae of the tube and the remarkable comb-like arrangement of the sternal marginal setae of the females. The broad wings with relatively few duplicated cilia, the maxillary stylets low in the head, and the form of the mesonotum, the metanotum and the last two antennal segments are all similarities to *Lichanothrips* described above. However, the simple slender legs and the well developed mesopraesternum suggest that *Xaniothrips* is unrelated. *Sacothrips* Moulton, 1968, has a similar long head with a pair of stout basal setae, but the fore tarsal tooth is well developed, the tube very long and the setae on tergite nine short. It is not possible at present to relate this new genus to any known form, nor to place it in a suitable tribe. The generic name is derived from the Greek word *xanion*—a carding comb, in reference to the comb-like setae of the female.

The two new species described in this new genus were collected by the author on a group of four young trees of *Acacia harpophylla.* They were living between green tied phyllodes, and as the individuals were highly active, pairs of tied phyllodes were picked from the trees and placed in a large plastic bag. At the time of collection it was assumed that only one dominant species was present, but later study showed that there were seven species, including *Xaniothrips xantes*, *X. leukandros*, *Lichanothrips albus*, *L. pulchra* and *L. magnificus*. As a result of the collecting method it was not possible to know what species were associated with each other between any one pair of phyllodes, but the two *Xaniothrips* were the dominant species and of these *xantes* was the most abundant. There was no evidence that the



Figs 96–101. 96–97. *Warithrips maelzeri*: 96, antenna. 97, tube and terminal setae. 98–101. *Xaniothrips* species. 98, *xantes*, male, antennal segments III–VIII (ventral view). 99, *leukandrus*, male, antennal segments III–VIII (ventral view). 100, *xantes*, female, antennal segment III. 101, *leukandrus*, female, antennal segment III.

phyllodes were tied together by Lepidopterous larvae, but instead, where two phyllodes were in contact there was a thin film of a sticky white substance. In the opinion of the author these phyllodes were stuck together by a secretion produced by a thrips species, and as the *Xaniothrips* were the most abundant it is possible that they were the originators of this complex association of species. The external surface of the phyllodes was tinged with a red colour, as also was noted on the surface of thrips-induced phyllode galls on *A. harpophylla*.

KEY TO THE SPECIES OF *XANIOTHRIPS*

1 Mid and hind femora yellow; hypodermal pigment of body red; males similar in colour to females but much smaller; marginal setae of sternite VIII of female arranged as in VII with a wide median interval; antennae elongate (Text-fig. 100), III more than 4·4 times as long as wide in female, more than 3·2 times as long as wide in male; antennal V with less than 20 short sensory hairs on ventral surface in both sexes (Text-fig. 98); tergite IX B_1 of female as long as B_2, longer than tube **xantes** (p. 459)

Mid and hind femora dark brown except at apex; body without red hypodermal pigment; males almost white, not much smaller than small females; marginal row of setae on sternite VIII of females continuous, without a median interval as on VII; antennae shorter with stouter segments (Text-fig. 101), III less than 3·8 times as long as wide in female, less than 2·8 times as long as wide in male; antennal V with more than 30 short sensory hairs on ventral surface in both sexes (Text-fig. 99); tergite IX B_1 of female shorter than B_2, shorter than tube **leukandrus** (p. 461)

Xaniothrips xantes sp. n.

(Text-figs 98, 100 & 102)

♀ macropterous. Body colour brown with red hypodermal pigment; legs golden yellow; antennals III–VII yellow with pale brown apices, VIII brown; dorsal pair of terminal setae on tube dark brown; sternal marginal setae reddish brown; wings shaded except near base, cilia dark.

With the characters given above in the generic definition and key to species. Head with faint transverse lines of sculpture; antennal V with 12–18 small sensory hairs on ventral surface, VI with 8–12 such hairs.

Measurements (in microns) of holotype ♀ with small ♀ in parentheses. Body length 5100 (4200). Head, length 560 (520); basal cheek seta 80 (73); postocular seta 160 (135). Pronotal shield, length 330 (290); median width 435 (385); epimeral seta 70 (70); posteroangular seta 240 (170). Mesonotal midlateral seta 40. Metanotal median seta 35. Fore wing, length 2200 (2000); distal width 450 (380); sub-basal setae 80; 90; 35 (80; 80; 30); number of duplicated cilia 18 (14). Tergite IV, posteroangular seta 520 (420). Sternite IV, longest marginal seta 290 (260). Tergite IX, B_1–B_3 450 (420). Tube, length 385 (350); dorsal terminal seta 290 (250). Antennal segments length, 95; 100; 210; 145; 145; 115; 90; 42 (80; 100; 195; 130; 130; 105; 80; 37).

♂ macropterous. Colour and structure similar to female but body size much smaller. Antennal V with 10–14 small sensory hairs on ventral surface, VI with 6–12 ventral hairs (Text-fig. 98). Sternal marginal setae numerous but short and stout. Tergite IX seta B_3 short and fine, B_2 shorter than B_1 but both stout at base.

Measurements (in microns) of allotype ♂. Body length 3150. Head, length 400; basal cheek seta 65; postocular seta 100. Pronotal shield, length 225; median width 320; epimeral seta 50; posteroangular seta 145. Fore wing, length 1500; distal width 280; number of duplicated cilia 13. Tergite IV posteroangular seta 210. Sternite IV longest marginal seta 50. Tergite IX, B_1 225; B_2 145; B_3 95. Tube, length 240; dorsal terminal seta 160. Antennal segments length, 65; 75; 113; 80; 86; 80; 70; 35.

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: 50 miles south west of Dalby, in tied green phyllodes of *Acacia harpophylla*, 16.vii.1968 (*L. A. Mound* 734), in ANIC.

Allotype ♂ with 8 ♂, 40 ♀ and larvae collected in tied phyllodes on same group of trees as holotype, in ANIC and BMNH.

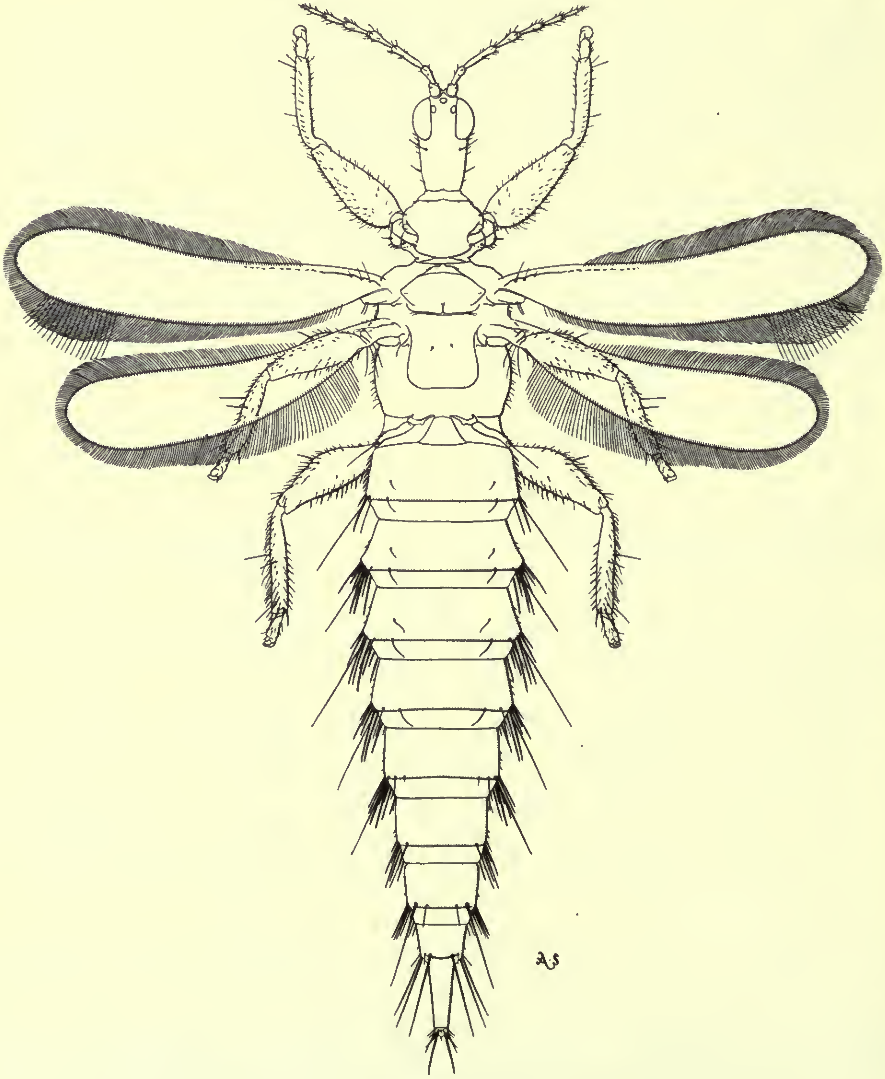


FIG. 102. *Xaniothrips xantes*, female.

Xaniothrips leukandrus sp. n.

(Text-figs 99 & 101)

♀ macropterous. Body colour brown, without red hypodermal pigment; all tibiae and tarsi golden yellow, fore femora brown at extreme base, mid and hind femora dark brown in basal two thirds; antennal segments III–VII yellow with brown apices; sternal marginal setae and stout setae on hind legs bright reddish brown, terminal setae of tube dark brown; fore wings shaded except at base, cilia dark.

Very similar to *xantes* but differing in the characters given in the key. Antennal V with 30–45 small sensory hairs on ventral surface, VI with 16–25 sensory hairs. Median marginal setae of sternite eight very close together, the stout marginal setae form a continuous transverse row.

Measurements (in microns) of holotype ♀ with small ♀ in parentheses. Body length 6000 (4700). Head, length 550 (510); basal cheek seta 70 (58); postocular seta 100 (80). Pronotal shield, length 385 (310); median width 480 (420); epimeral seta 65 (55); posteroangular seta 210 (160). Fore wing, length 2600 (2100); distal width 520 (380); number of duplicated cilia 28 (29). Tergite IV, posteroangular seta 410 (270). Sternite IV, longest marginal seta 440 (340). Tergite IX, B_1 350 (260); B_2 and B_3 520 (420). Tube, length 400 (330); dorsal terminal seta 270 (230). Antennal segments length, 90; 100; 180; 130; 145; 135; 100; 48 (80; 85; 145; 113; 125; 115; 83; 40).

♂ macropterous. Body colour mainly yellow; pale brown shading on median area of pronotum and head, also pterothorax and tube; legs clear yellow; antennals I and II yellow, II–VII yellow with apex brown, VIII brown; fore wings very weakly shaded, cilia dark; dorsal setae on tergite IX and tube brown, remaining setae pale.

Antennal segment V with 35–40 small ventral sensory hairs, VI with 20–25 ventral hairs (Text-fig. 99). Dorsal terminal setae of tube longer than tube.

Measurements (in microns) of allotype. Body length 3900. Head, length 450; postocular seta 80. Pronotal shield, length 275; median width 370. Fore wing, length 1900; distal width 300; number of duplicated cilia 18. Tergite IX, B_1 195; B_2 180; B_3 115. Tube, length 195; dorsal terminal seta 245. Antennal segments length, 70; 80; 132; 94; 100; 97; 77; 38.

MATERIAL STUDIED. Holotype ♀. QUEENSLAND: 50 miles south west of Dalby, in tied green phyllodes of *Acacia harpophylla*, 16.vii.1968 (*L. A. Mound* 734), in ANIC.

Allotype ♂ with 5 ♂, 5 ♀, collected in tied phyllodes on same group of trees as holotype.

TABLE II

Summary of Host Records of Phlaeothripinae from *Acacia* species

(* indicates gall-forming species)

Division ***Phyllodineae***

Section ***Juliflorae***

aneura
Csirothrips watsoni
Dunatothrips aneurae
Koptothrips dyskritus
*Oncothrips antennatus
*Onychothrips tepperi
*Onychothrips arotrum

brachystachia
*Onychothrips tepperi
*Onychothrips arotrum

doratoxylon
*Kladothrips augonsaxxos
Warithrips acaciae

longifolia
Akainothrips citritarsus
Grypothrips mantis
Katothrips tityrus

floribunda
Dactylothrips priscus

Section ***Plurinerves***

cambagei
Katothrips yamma
*Kladothrips ellobus
Koptothrips xenus

harpophylla
Akainothrips citritarsus
Dactylothrips marsupium
Dactylothrips giraulti
Grypothrips curiosus
*Kladothrips acaciae
Koptothrips zelus
Lichanothrips albus
Lichanothrips magnificus
Lichanothrips pulchra
Xaniothrips xantes
Xaniothrips leukandrus

homalophylla
*Oncothrips tepperi

implexa
Akainothrips citritarsus
Grypothrips mantis
Katothrips tityrus

melanoxylon
Katothrips tityrus
*Oncothrips rodwayi

oswaldi
Katothrips hyrum
Koptothrips flavicornis
Koptothrips dyskritus
*Oncothrips tepperi

pendula
Grypothrips mantis
Katothrips pendulae
*Kladothrips rugosus
Koptothrips flavicornis
Oncothrips habrus

sclerophylla
*Oncothrips tepperi

stenophylla
Akainothrips citritarsus
Grypothrips mantis

Section ***Uninerves***

retinodes
Katothrips duplex

Division *Bipinnatae*

Section *Botrycephalae*

baileyana
Kellyia hoodianus

botrycephala
Kellyia hoodianus

decurrens
Rhopalothripoides froggatti

dealbata
Dactylothrips australis
Rhopalothripoides froggatti

elata
Kellyia hoodianus

mearnsii
Dactylothrips tasmani
Rhopalothripoides froggatti

parramattensis
Rhopalothripoides froggatti

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